

DENVER, COLO., Sept. 20, 1919  
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# MUNICIPAL JOURNAL AND PUBLIC WORKS.

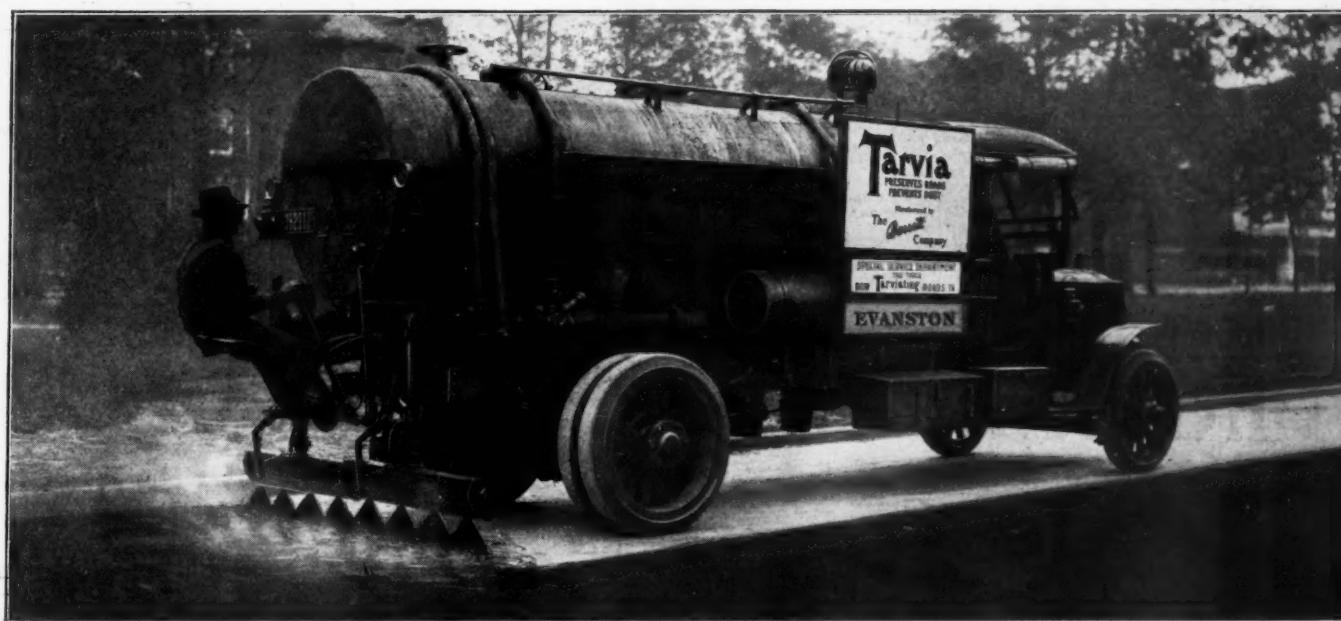
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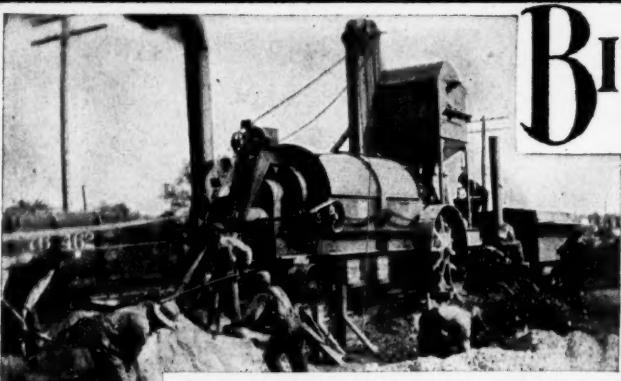
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### SCHOOL BUILDING PROGRAM.

The Bureau of Education, Department of the Interior, gives the following as the questions that must be answered before a city can prepare a properly planned school building program:

What is the present school population?  
How much has it increased in the past 8 or 10 years?  
Where is the congestion greatest?  
In what direction is the tide of population moving?  
What kind of buildings should be put up and in what  
parts of the city in order to provide for growth as well  
as for present enrollment?

How much playground space is needed?  
What kind of activities should be provided in the  
school buildings in order that the children shall grow  
to be healthy, intelligent, self-reliant, and worthy to  
carry on the traditions of the city?

Considering the funds available for building purposes  
in the present and in the immediate future, what items  
in a comprehensive building program should be taken  
up first, and what items can be left for future building  
appropriations?

In addition, it may be said that new school buildings  
are seldom finished and equipped by the beginning of the  
fall term, and that consequently they should be started  
earlier than they are. Buildings for next year should  
be planned at once and started this fall or, if small, the  
first thing in the spring.

### PUBLIC EMPLOYMENT THAT IS A PUBLIC TRUST.

Several summers ago the garbage-collecting employes  
of New York City went on strike and the city was threatened  
with a pestilence from huge piles of garbage which  
collected in the streets. A few days ago the police of  
Boston went on a strike and the city was threatened with  
all the damages that would result from the unrestrained  
acts of criminals, rowdies and thoughtless boys. At the  
time it was intimated that the fire department forces might  
begin a "sympathetic strike," also the electric lighting  
employes.

It takes something of this kind to bring home to us  
a realization of how important certain classes of public  
employes are to the very existence of a city. Necessary  
as are the police, the firemen are even more so. Not more  
than two or three per cent of the population need police  
restraint, and the remainder could easily organize tempo-  
rarily for mutual protection. But let a fire get out of  
hand while firemen are on a strike, and the whole city  
might be wiped out.

If, during the police strike, the employes of the lighting

companies had gone on strike and the streets had been left in total darkness, the danger would have been increased many fold. Even with the police on duty, crime could with difficulty be prevented in dark streets.

And suppose, in a city with a direct-pumping water supply, whether municipally or privately operated, the employes at the pumping plant should strike and prevent others from taking their places. The danger from fire above referred to would exist, and in addition, water for drinking, cooking, flushing toilets and other essential needs would be unavailable. The city might burn down, filth would unquestionably accumulate and an epidemic of typhoid and other filth diseases would be almost certain to follow; while every citizen would suffer inconvenience and hardship.

Not only comfort and safety, but life itself in a large city depends upon the continuous performance of their duties by certain classes of men; and these are not always employed directly by the city, as in the case of private water works or street lighting companies, or garbage collecting by contract. For such men to refuse to serve is a crime against their fellow citizens and cannot be tolerated. Also, for them, as a class, to form close affiliations with any other one class of people, be they employers, employes, socialists, prohibitionists, or what not, is to imperil democratic principles and government and cannot be permitted.

On the other hand, people should realize that such employes are especially essential to their personal well-being, and that, as they are in honor bound to continue the performance of their duties without thought of ceasing, so is the public in honor bound to see that they are suitably paid for such services and that the conditions under which they perform their duties are made as agreeable as possible, in view of those under which other citizens are working at the same time. No man's hours and pay are satisfactory to him for long, but there should be no just cause for discontent with either in the case of the classes of public servants referred to.

There is much that should be improved in the relations between the public and such employes and, regrettable as it is, the Boston police strike may serve to call attention to this and lead to understandings in cities throughout the country that will be better for both public and employes.

That many of the latter realize their duties to the public is being made evident, and gives promise of readily reaching such an understanding. For illustration, The Uniformed Officers Association, of the New York Fire Department, on September 15th adopted resolutions stating that "The members of the uniformed force of the Fire Department being public officials serving as a force of public safety, we believe that any attempt of an organized effort on the part of such force to engage in a strike under any circumstances would be akin to mutiny and desertion of posts in time of danger, which would not only result in an undue menace to the lives and property of the citizens of the city, but would also be an unlawful proceeding and a crime against civilization and government." Also, that they believed that the citizens will "provide for the proper administration of our department, and in recognition and appreciation of the service we render, will, at all times, consider and decide with justice all matters affecting our material conditions and welfare"; and that they "hereby pledge to the officials of the city and to our employers, the people of the city, that we shall stand faithful to the trust imposed in us and to our oath of office, unwavering in our devotion to duty as members of the uniformed force of the Fire Department, to protect and preserve our city and government, our department, and the lives and property of the community."

Men who hold such sentiments are not mere employes—they are citizens in offices of public trust, in appointing them to which the city is honoring them with its confidence as picked men especially worthy of such trust. Let both men and public realize this and act accordingly, and there will be no thought of strikes by such men nor unjust treatment by the city in either the pay or conditions of service provided for them.

## STREET CLEANING AND REFUSE COLLECTION IN NEWARK

**Appliances, Methods and Organization in a Large Manufacturing and Commercial City—Cleaning by Motor Flushers, Machine Brooms and Hand—Private and Municipal Collection — Meadow Dumps—Pig Farm.**

The service of street cleaning and refuse collection in the city of Newark, New Jersey, has, during the past few months, been undergoing a development which promises to make it among the most effective to be found in any city in the country. The director, Thomas L. Raymond, becoming convinced last year that this service is perhaps the most difficult as well as the most important of those which a city government is called upon to render, decided to endeavor to improve the nature of the service rendered in Newark. With this in view, he decided to obtain an experienced and competent man to take charge of the work under the title of "engineering supervisor," and a competitive examination was held, open to citizens of any part of the United States. Several applicants were examined and the highest grading was given to James W. Costello, who was then division engineer of the Bureau of Street Cleaning of Philadelphia. Mr. Costello was appointed to the position in December, 1918, and immediately began taking steps to develop the service into one adequate for a progressive city of nearly 500,000 population. We are indebted to Mr. Costello for the information contained in this article.

### STREET CLEANING.

For cleaning the streets the city uses two motor flushers, fourteen machine brooms, and six snow plows for winter use, to be hauled by the flushers. In addition to the drivers of these, about two hundred men (the number varies from day to day) are used in hand work, either as "patrol" or "block" men, or for collecting the dirt brushed into winrows by the machine brooms or flushed into the gutters. Of these men about 140 are regulars, while 60 or more are carried as extra men, the number of which employed from day to day depends upon the requirements of the service, the weather conditions, etc.

Although there are but two motor flushers, each of these works sixteen hours a day in two 8-hour shifts, and thus does the work of four machines. Mr. Costello is in favor of flushing for a considerable part of the street cleaning and hopes to have six more motor flushers in service next year. Each flusher is operated by two men, a driver, who also keeps the records of area covered, time of filling tank, etc., and a helper who regulates the flushing valves. For roadways forty feet wide or less, the flusher cleans from gutter to gutter in one trip, but



A STREET IN THE ITALIAN DISTRICT OF NEWARK BEFORE FLUSHING.

for wider streets two trips are made, each flushing toward one gutter only. Where there are street railways, the railway space ordinarily is not flushed, chiefly because the pavement in the railway strip does not permit of flushing successfully.

All the streets of the city whose pavements permit it are flushed at least once a week. The main streets in the business section are flushed three times a week, during the night time. These streets are also served by block men during the day, these men being on duty from 7:30 a. m. to 4:30 p. m., with one hour for dinner. Their first duty on coming in the morning is to clean from the gutters the dirt deposited there the night before by the flushers.

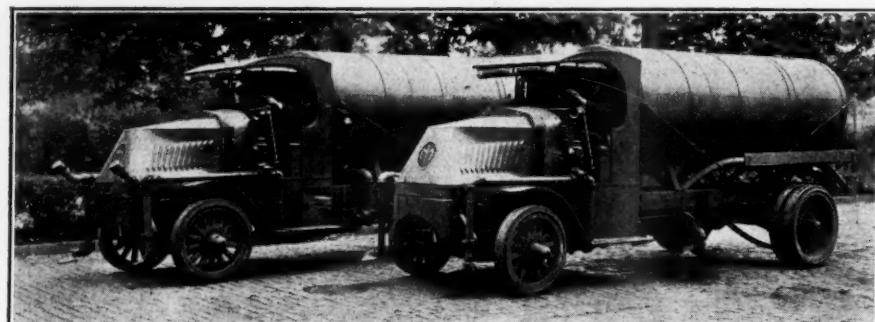
The flushers clean an average of 350,000 square yards in the two shifts each day, or 175,000 square yards in eight hours, as compared to 80,000 square yards cleaned in the same time by machine brooms.

There are fourteen machine brooms in service, which also are used in all parts of the city. Each broom is driven by one man and followed by a gang of eight men which sweep the winrows into piles, and these in turn are followed by two or three collecting wagons, the drivers of which shovel these piles of dirt into the wagons, occasionally assisted by a man from the broom gang when this is necessary.

There are 55 block men, located in the streets of the business district and the business streets of the outlying



THE SAME STREET AFTER FLUSHING.



NEWARK'S TWO MOTOR FLUSHERS.

districts. The area covered by each block man varies from 7,500 square yards in the congested district to from 12,000 to 15,000 square yards in the outlying districts. The block men do not use cans and can carriers, as is the practice in many cities, but the dirt collected by the brooms and scrapers is pushed over the pavement to and shoveled into boxes placed along the curb. These boxes are located about 100 to 125 feet apart on each side of the wide main streets in the business district, and at similar or somewhat greater intervals along one side of the other streets. These boxes are made of No. 18 gauge galvanized sheet iron, with a flat lid of the same material hinged to one side, and provided with a handle on each end. The box is 2 feet 6 inches by 16½ inches, by 15 inches high. While they cannot be claimed to be ornamental, the boxes at least are not so unsightly as the cans used ordinarily, and the shape prevents their being tipped over and thus littering the street, while the cover prevents their contents from being blown about. Most of the sidewalks where they are used are of generous width, so that the 18 inches of sidewalk width occupied does not interfere with the pedestrian traffic. The boxes are not ordinarily placed nearer a street corner than about twenty-five feet. At each corner there is usually a trash can with a half-open hood similar to those used in New York City, which is stationed alongside the box. The sweepings are all placed in these boxes, from which they are collected by collecting wagons at frequent intervals.

While the ashes and rubbish collected by the department have to be hauled a long distance to dumps on the meadows, the street dirt can usually be disposed of by a short haul, a great deal of it being used as fertilizer for gardens and by the park department.

The horses used for the carts and brooms are owned by the city and kept in two stables, one containing forty horses and another eleven horses. It is hoped (as will be referred to later) to establish two or three city stables in which can be housed all the horses used both for street cleaning and for refuse collection.

#### REFUSE COLLECTION AND DISPOSAL.

In 1915 the city made a contract, to run for five years, for the collection of garbage, ashes and rubbish, the same to be kept separate by the householders. After a few months, the contractor claimed that the refuse was so insufficiently separated that he was unable to utilize the garbage and salvage rubbish materials as he had intended and could have done had the city secured the proper separation, and he abandoned his contract. The city then took over the collecting service, acquiring the contractor's wagons, and has since extended the collecting plant, but does not own the horses for use in connection with the wagons, hiring these with the drivers at a fixed amount per day. Until quite recently the amount paid was \$8 a day but horse owners are now asking \$10 per day and the city has had no alternative

but to pay this, although correspondence with many other cities of approximately the same size indicates that \$6, \$7 or a maximum of \$8, is the price paid by them. The city collected all the rubbish mixed and carried it to dumps on the meadows, where the material was used for grading streets over this low land. A contract was made by which the privilege of sorting over this mixed refuse was granted to a contractor, who in turn kept the fills in condition, leveling them off and furnishing

such labor as was necessary on the dumps, thirty men being provided at the three dumps. In addition, the contractor paid the city \$3,000 for the privilege of salvaging whatever was possible.

On July 3rd of this year the city let a contract to the National Utilization Company for a period of five years beginning September 1st, under which contract the city delivers the garbage to a piggery located within city limits about a quarter of a mile from the Passaic river. The company is to pay the city for each ton of garbage delivered eight times the price per pound of live killing hogs on the Chicago market, this price being determined by averaging the top price for each month. The city agreed to enforce the existing ordinance so as to effect a good primary separation of the garbage and also agreed to endeavor to pass ordinances whereby the contractor will receive all hotel and restaurant garbage. In March of this year a new ordinance had been introduced requiring the separation of refuse into ashes, rubbish and garbage, and at the present time such separation is being secured with fair effectiveness in about 45 per cent of the area of the city. A police officer and inspector are assigned to each district to enforce this ordinance. Within a few months, by the time the garbage contractor is ready to receive all of the garbage of the city, it is expected that separation will have been made effective over the entire area.

In studying the problem of garbage disposal, a reduction plant of 150 ton capacity was contemplated, but the idea was abandoned in view of the present cost of building, an estimate received from one company being \$750,000 exclusive of the site. It was then concluded to endeavor to make satisfactory arrangements for feeding the garbage to pigs, with the result already described. It is estimated that five thousand hogs will be required to consume the entire garbage of the city during the peak months. The National Utilization Company are planning to use intensive methods. The hogs will be housed in buildings, each unit being 100 by 100 feet and accommodating from 800 to 1,000 hogs. One such building is already in use containing about 900 pigs. Three such buildings are already completed and it is expected that a second will be filled with pigs by the end of this month. A double concrete driveway and feeding floor 24 feet wide extends through the center of each building with a gutter on each outer edge next to the pens. These gutters discharge into large grease traps to prevent solids reaching the sewer. On each side of the driveway are five pens which have a slight pitch towards the gutters. Each pen is equipped with an automatic drinking fountain. Each opens into a yard fifty feet deep in which the pigs may have outdoor exercises. The houses are of saw tooth construction with windows the entire length below the eaves and in the peak, making them both light and sanitary.

*To be concluded.*

## SURFACING OLD GRANITE BLOCK PAVEMENT.

### Method Employed in Jersey City, Using Asphalt, Screenings and Sand.

By CHARLES E. MURPHY.\*

What to do with old, worn granite block pavement is a question confronting many municipal engineers of the country today. There is too much invested in the granite block pavement to tear it up and relay; and labor cost, particularly in the east, temporarily prohibits the taking up, reclipping and relaying the granite block. Jersey City has solved the problem on Pacific Avenue by developing a very unusual method of surface treatment with asphalt which apparently is proving successful from every standpoint. By this method the old granite block pavement, which is a very substantial base, is made smooth and noiseless and after all more durable at a very reasonable cost. In fact, the cost is such that re-treatment can be made when required, similar to stone road maintenance.

On of the features of this treatment of granite block is the ease and facility with which the work is done. As the initial step, the granite block pavement is thoroughly flushed with water and made clean. This first phase of the work may seem on the face of it a mere, perfunctory operation, but in reality it is highly important, as the presence of dust and dirt prevents perfect adhesion of the surfacing materials. Following the flushing, the pavement is allowed to dry, after which a coat of asphalt is applied to the old granite block by an automobile pressure distributor.

It is advisable in this process to use an asphalt with penetration between 90 and 100. The asphalt is applied in sufficient quantity to fill the interstices and to thoroughly flush the blocks. Upon the asphalt flush-coat sufficient  $\frac{3}{4}$  inch trap rock is spread to take up the asphalt and form a uniform layer on the old block. The pavement is then thoroughly rolled with a ten-ton roller until it assumes the appearance of an asphalt-macadam pavement. Upon this surface a seal coat of the same grade of asphalt is spread and covered with sharp, coarse sand until all excess asphalt is absorbed. The pavement is then rolled again, preferably with a lighter tandem roller, until the surface is smooth. Sand is spread either by hand or with a mechanical sand spreader. Where soft spots appear after rolling, more sand is spread in this layer until the asphalt ceases to come up through the surface. Under traffic the pavement soon takes on the appearance of a sheet asphalt pavement.

There are many desirable features about this process of surface-treating granite block pavements. One is the fact that the street is not closed to traffic during the process. While one side of the street is being surface treated, the other side accomodates the traffic. Furthermore, the new surface is ready for traffic immediately after completion. The height of curb often prevents the laying of a sheet asphalt or asphaltic concrete pavement, but by this method the curb height is so slightly reduced that it will not materially affect drainage.

The simplicity of this method of prolonging the usefulness of the granite block street makes it practical for even the smallest community. It is not necessary to have an asphalt plant and the labor required is much less than if the street was resurfaced with a hot-mix asphalt top. If a sand spreader is used instead of spreading by hand, only three or four laborers are necessary.

This method of construction can be carried on at a very rapid rate so that the new surface of the entire width of the street is ready for use within a day or two after the work is started. This is an important consideration on a congested city street.

The popularity of the new surface on Pacific Avenue is demonstrated by the fact that prior to treatment there was little or no automobile traffic on the street, and immediately after construction had been completed the street became popular with automobile drivers.

This method was developed by Charles A. Van Kuren, city engineer of Jersey City. The contractors were Earle Lansdell Co. of Hackensack, N. J. Texaco 96 paving cement was the binding medium used.

### TO PREVENT STREET LITTERING.

Probably the most difficult problem presented to the Bureau of Street Cleaning in New York is keeping the streets and sidewalks even passably clean in the lower east side of the city, where push-cart peddlers swarm by the thousands. There are in the city approximately six thousand push-carts from which goods of every description are sold, and a large percentage of them are found in this section of the city. Each push-cart is required to have and use a broom and a receptacle for refuse, but it is difficult to enforce this regulation. The peddlers not only do not clean up all of the vegetable and other refuse around their carts before leaving their position on the street, but they have formed the practice of dumping on the street all material left on their carts which is not worth saving. In addition to the peddlers, residents themselves add considerably to the littering, many of them throwing old clothing and bundles of rubbish from their windows, letting them fall to the streets where they will, and many of the sidewalks are never swept by the occupants of the adjoining property.

The majority of the push-carts are owned by what is known as push-cart stable men, each of which has many carts under his control which he rents to the peddlers for from 10 to 15 cents a day, and an effort has recently been made to enlist the interests of these men in preventing the littering of the streets by peddlers. On August 21, 45 of these push-cart owners attended a conference at the police inspector's office and were asked to assist the street cleaning department by telling all the peddlers to bring to the push-cart stables at night all refuse left on the carts, first picking up with their broom and receptacle all refuse lying on the streets around their carts. The police inspector told them that if the peddlers continued to disobey the laws, sooner or later the push-cart would be done away with altogether and they would lose the revenue which they now derive from renting them. They were also given about five hundred small books which had been printed by the New York Merchants Association in English, Italian and Hebrew at the request of John J. Kiernan, street cleaning superintendent of the Fourth district. The push-cart owners were told that if the rubbish on the carts was brought to their stables, the street cleaning department would have it all removed before midnight each day. This would not only prevent the littering of the streets, but the removal from the stables would be much easier than collection and removal from the streets. All of the push-cart owners promised to give all the assistance possible of the kind asked.

Before this, the street cleaning department had tried to obtain help from the boys of high school age living in the district, asking them to speak to the residents relative to sweeping sidewalks, throwing rubbish in the

\*With Asphalt Sales Department, The Texas Company.

streets, etc. No result appeared to follow this appeal for co-operation of the boys. Two thousand of the books previously referred to were distributed by an employe of the department who speaks four languages and had been class instructor in the army. This man called on every store keeper and janitor and gave them one of these books, at the same time calling their attention to the dirty condition of the street and requesting their assistance of the street cleaning department in keeping the streets clean. In order to make the work more effective, a representative of the police department accompanied the street cleaning representative in a canvass of the entire district. As a result of this work, some improvement is being noticed in the general condition of the streets between Sixth and Eleventh streets, avenues A and D, which is the section where the littering has been worse and where most of these efforts have been concentrated.

#### ANOTHER MEADOWS HIGHWAY.

The city of Newark, with its population of nearly 500,000 and its numerous industries, is separated from Jersey City and the ferries to New York by a considerable width of meadow land that extends from its southern to far above its northern limits and by Newark bay and the Passaic and Hackensack rivers. The only road crossing these meadows from Newark is the Lincoln highway. During the past four years the traffic over this highway has increased rapidly. Census figures show that approximately 10,000 vehicles are using the Lincoln highway during the twelve-hour daylight period, or a vehicle every four seconds. The Lincoln highway crosses the Passaic and Hackensack rivers on bridges which are only a few feet above the surface of the water and which have to be opened from time to time to permit the passing of water traffic. The records show that over 11 per cent of the year is lost to the road traffic by the opening of these bridges. Congestion on the Lincoln highway during rush hours has reached a very serious condition, as many as 300 vehicles at times being held up by the opening of the bridge. The average time necessary for such opening is approximately five minutes, and during the year 1918 the Passaic river bridge was opened over nine thousand times.

The above facts were presented by Frederick A. Reimer, county engineer of Essex county and P. J. Wasser, county engineer of Hudson county, at a meeting of the bridge committees of Essex and Hudson counties, and on their recommendation the two counties and the state highway commission each appropriated \$5,000 to be used in making preliminary surveys, soundings and borings to determine the proper location for a new highway. A special committee to take charge of the work was formed consisting of F. P. Boland, Ernest Ryman, R. W. Booth, and a committee of engineers consisting of Mr. Reimer, Mr. Wasser, H. W. Hodge, consulting engineer; and Charles A. Meade, of the state highway commission.

Before proceeding with the preliminary work, a public hearing was held at the Hudson county courthouse on June 10, at which many of the civic organizations of Essex and Hudson counties were represented. Following this hearing, the engineers prepared more specific plans as to the location of the proposed bridge, selecting a location immediately adjacent to and paralleling the Lehigh railroad bridge across Newark bay, about two miles south of Lincoln highway. One advantage of this location is that it affords facilities for truck deliveries to the industrial interests about Port Newark, a section of the meadows being developed by the city as an industrial center. Also, the highway would connect directly with projected street developments as planned by Newark, and

by Bayonne and Jersey City on the other side of the bay. This location would tend to divert from the Lincoln highway trucks that had Port Newark and vicinity and points south of this as their destination. It was also thought that it would relieve congestion not only on Lincoln highway, but also at the "four corners," Newark's business center, through which the highway passes and which has for years presented Newark's most difficult traffic problem.

In as much as a large percentage of the traffic now using the Lincoln highway, and which would be diverted to the new highway and bridge, passes through Essex county to other sections of the state, a considerable share of the cost should, and it is believed will, be borne by the state at large. Should the bridge be constructed, it would probably become an important part of the state highway system. The cost of the bridge, with necessary approaches, is estimated to be about two and a half million dollars.

A further public hearing on this bridge was held on Tuesday, August 19, at Newark, and following this, the committee of engineers has decided to proceed at the earliest possible date with the preliminary surveys, soundings and borings.

#### SCAMPED HIGHWAY BRIDGES.

A few months ago we gave prominent mention to the fact that a large percentage of the highway bridges in this country can not safely carry the loads which are permitted on the highways. It was assumed that most of these bridges are deficient in strength because designed for lighter loads before the recent advent of the heavy motor trucks.

There are, however, altogether too many instances in which the weakness of the bridge is due to poor designing or faulty construction.

A recent report on the bridges in Montgomery county, Indiana, brings to light a condition which it is to be hoped can be duplicated in few if any other sections of the country. This investigation was made by A. L. Donaldson, civil engineer and field examiner, T. L. Major and H. W. C. Fosdick, field examiners for the State Board of Accounts, reporting to Jesse E. Eschbach, chief examiner, on recent public works in Montgomery county. These examiners report that they find that "numerous bridges and culverts have been constructed in the last few years, which have broken and fallen within a short time after their completion and had to be reconstructed at the expense of the taxpayers of Montgomery county; and from our own observations together with other information which we have obtained, we frankly state that we have not examined a single bridge or culvert that was constructed according to plans and specifications, and as a whole the work that we have examined is the most fraudulently constructed of any work of like character that has been brought to our attention." One case is cited in which a contract for a bridge was let on August 17, 1917, was paid for on October 4th of that year, and on May 7th of the following year a second contract was let for its reconstruction.

The investigators found that, instead of taking steps to secure proper construction, the different county surveyors have increased the amount of material used in walls and abutments by from 30 to 50 per cent above what is necessary. The report names a number of contractors as having defrauded the public by use of improper quality and insufficient quantity of materials, and recommends that the Board of County Commissioners instruct the county attorney to sue the contractors for sums, which the have calculated and state in each case.

Among some of the features of the work examined are the following: Concrete for substructure required to be one part portland cement to five parts of sand and gravel; concrete found contained at least ten parts of sand and gravel to one of cement. In this bridge the excavation for abutments and wing walls lacked 2.4 feet of being carried to the depth required by the plans. In the case of another culvert "owing to poor workmanship and the small proportion of cement used in the concrete and the fact that the excavation for the walls at the south end were made three feet less in depth than they were required to be made, these walls have broken to such an extent that it will be necessary to reconstruct them." A number of other bridges were found to be deficient in thickness and height, as compared with the plans upon which contracts were let. In another case a wing wall had been built which was not according to plans and the contractor was ordered to rebuild it, but was paid for the reconstruction as extra work, and the amount so paid for was 50 per cent greater than that actually put into the reconstruction.

It seems almost inconceivable that such faulty work would be permitted by the officials in charge of construction, but it is reported that the class of men employed by the commissioners to supervise construction of concrete structures "know less about that particular line of work than any other class of work they might be assigned to."

All of the structures referred to in this report were comparatively small ones, few of them costing over \$2,000 each; but the collapse of a small culvert blocks a highway as effectively as that of a large one, while their number is so great that the simultaneous failure of any considerable percentage of them would practically remove all highways from use until they were reconstructed. The campaign for securing stronger bridges on our highways should unquestionably include culverts of all sizes; and also should include proper supervision of construction as well as proper designing.

#### CONTRACTS AND FREIGHT RATES.

The following extracts from an article in the publication of the Associated General Contractors (which goes under the name of "Members' News Letter") brings up a matter of importance to all who are about to let contracts, especially those the performance of which will extend over a considerable period of time.

Recent demands of the railroad brotherhoods for increased wages amounting to approximately \$800,000,000 have greatly strengthened the general belief that a marked advance in freight rates will be announced in the not distant future. However, until it is known how much of the wage increases will be allowed, no definite action can be taken as the additional income must at least balance the added expense due to higher wages.

In the meantime, it is evident that every contractor who is bidding on work should protect himself against the increased cost which would follow an advance in freight charges. This would be accomplished by estimating high enough to allow for the probable increase or preferably, in cases where the plan is practicable, by the insertion of a clause in the contract which provides for additional compensation to cover the increased cost due to higher freight rates.

Should the full demands of the railroad men be granted, the necessary increase in the freight tariffs would amount to at least 30 to 40 per cent, according to a writer in the New York Annalist. Such an increase would without question add greatly to the cost of most commodities, and as for its effect on contractors with uncompleted

work, it would certainly change many a paying job into a losing one, and bankrupt other men who are now breaking even.

Particularly on state or municipal highways and street paving, where the freight charges are likely to form a high percentage of the total cost of the work, it is important that provision be made for relieving the contractor of the uncertainty resulting from the present railroad situation. In many cases it should be possible to secure the insertion of a paragraph in the contract and specifications which would protect the contractor against further advances. At the present time at least some of the states are giving the contractor the benefit of the special reduction of ten cents per ton on certain road building materials which was made last June on shipments to federal, state and municipal authorities.

One of these states is Illinois, which now includes in the specifications under "Special Provisions" a paragraph that covers future changes in freight rates as well as the reduction referred to. This policy has been announced by the Division of Highways, Department of Public Works and Buildings, as follows:

All bidders are expected to base their proposals on the reduced freight rates above outlined and on the war tax exemption. All contracts entered into will contain a clause to the effect that in case freight rates are increased after the date of the receipt of bids and before the date set for completing the work, the contractor will be paid extra an amount equal to the increase in freight charges; and in case of a reduction in freight rates, a corresponding deduction will be made from the payments otherwise due the contractor.

#### CALIFORNIA MUNICIPAL ELECTRIC PLANTS.

##### Financial Results Last Year of Municipal Operation of Such Plants—Municipalities Taking Over Private Plants.

Municipalities throughout the state of California are giving serious consideration to the question of taking over their local electrical distributing systems, purchasing the current at wholesale rates and retailing it at a price to cover expenses and a fair margin of profit, which price is sufficiently low to encourage consumption and enlarge the number of consumers. A number of cities have already taken steps to take over the local systems by filing applications with the Railroad Commission to determine the just compensation to be paid therefor. The following cities and towns have such proceedings pending: Oroville, Merced, Chico, Mountain View, Mayfield and Sunnyvale. Other places are almost ready to take similar action. Los Angeles has recently authorized a bond issue of \$13,000,000 to purchase the local system in that city.

In the case of one city—Redding—the Railroad Commission has fixed the value of the distributing system of the Northern Electric Company at \$42,041, the claimed value of \$225,000 being disallowed. This decision establishes certain principles to be observed in fixing values which will doubtless be adhered to more or less closely in the proceedings that are now pending.

Nineteen cities and towns in the state operate municipal lighting systems. The financial results of such operation are set forth in the annual report of the state controller in the "Financial Transactions of Municipalities and Counties for the year 1918."

The total ordinary receipts of these nineteen plants were \$1,917,836; the total operating expenses were \$903,806; the net operating revenue was \$1,014,030. Out of this sum was paid \$237,153 for interest and redemption of

bonds and \$443,275 for extensions and improvements, which last sum includes \$71,316 receipts from the sale of bonds. The net profit was \$404,946. The item of depreciation would appear to be amply provided for by the sums expended for the redemption of bonds and for improvements and betterments.

Considering the individual plants the following are the net operating revenues:

Los Angeles, \$661,830; Pasadena, \$102,092; Alameda, \$64,499; Riverside, \$92,602; Glendale, \$17,776; Palo Alto, \$16,286; Santa Clara, \$3,158; Anaheim, \$13,212; Colton, \$5,494; Roseville, \$4,585; Lodi, \$14,677; Healdsburg, \$6,896; Burbank, \$7,342; Gridley, \$6,015; Tehachapi, \$1,430.

Deficiencies occurred as follows: Ukiah, \$1,955; Azusa, \$39; Loyalton, \$698; Biggs, \$1,171. In these cases, however, it is probable that no credit was given for the lighting of streets and that had such credit been given there would have been a profit instead of a loss. In the case of Biggs, the town has an extremely low rate which represents a gain to the consumers.

Most of the cities credit to their revenues the item of street lighting, and at a rate of about three cents per kilowatt, which is about twenty-five per cent lower than is usually paid to the privately owned systems.

There has been no increase in municipal rates due to the war conditions. Operating expenses have increased considerably since 1916, a part of which has been taken up by increased consumption.

Los Angeles, Alameda, Palo Alto and Loyalton generated practically all of their current and Healdsburg about two-thirds of the amount sold. The others purchase all or the greater portion from the hydro-electric companies. The following was the average price paid by the cities named per kilowatt:

Pasadena, \$0.00566 (five and two-thirds mills); Riverside, \$0.007; Santa Clara, \$0.012; Anaheim, \$0.009; Roseville, \$0.01; Lodi, \$0.009; Ukiah, \$0.0135; Burbank, \$0.0135; Gridley, \$0.013; Biggs, \$0.015; Tehachapi, \$0.025. Complete statistics of other cities are lacking.

It will be observed that the larger cities purchase current for less than one cent per kilowatt, and the average for the smaller towns is about one and a quarter cents per kilowatt.

The municipalities retail the current generated and purchased at rates considerably in advance of the cost. The minimum rates charged in the different cities are as follows: Los Angeles, lighting \$0.018, power, \$0.0076; Pasadena, lighting \$0.035; Alameda, lighting \$0.0225, power \$0.014; Riverside, lighting \$0.04, power \$0.0125; Glendale, lighting and power \$0.0115; Palo Alto, lighting and power \$0.02; Santa Clara, lighting \$0.038, power \$0.028; Anaheim, lighting \$0.07, power \$0.025; Colton, lighting \$0.04, power \$0.01; Roseville, lighting \$0.03, power \$0.02; Lodi, lighting and power \$0.02; Healdsburg, lighting \$0.08, power \$0.03; Ukiah, lighting \$0.03, power \$0.015; Burbank, lighting \$0.0585, power \$0.0395; Azusa, lighting \$0.0515, power \$0.033; Gridley, lighting \$0.024, power \$0.02; Loyalton, lighting \$0.10, power \$0.035; Biggs, lighting and power \$0.03; Tehachapi, lighting \$0.04, power \$0.03.

Most cities impose a minimum or service charge and this operates to provide compensation for line losses. This line loss is usually about fifteen per cent of the current. In other words, the total current registered by consumers' meters is about fifteen per cent less than the amount registered at the station meter.

The Railroad Commission has as yet fixed no valuation for distributing systems, except in the case of Redding. Hearings have been held in the other cases, arguments made and briefs filed, and decisions will probably be made

soon. If the price fixed is the fair compensation to be paid for the systems to be acquired it remains to be seen whether or not the utility companies will accept the same in the spirit of fairness; whether they will impose obstructions and require condemnation proceedings followed by appeals to the highest courts. It is a situation full of interest and possible developments. In the event that such obstructions and delays are encountered, the municipalities will no doubt consider the exercise of their constitutional power and go ahead and construct their own systems. This, however, will probably not be done except as a measure of last resort.

The above information is from an article in "Pacific Municipalities," prepared by H. A. Mason, one of the editors of this, the official organ of the League of California Municipalities.

#### DISPOSAL OF COMMERCIAL WASTES.

The Merchant's Association of New York City has employed Prof. O. H. Landreth to study the problem of disposal of municipal wastes, especially the factory and business wastes (including garbage) now disposed of at private expense. This disposal at present places a heavy burden of expense upon business interests, and the association hopes that Prof. Landreth may suggest some plan whereby this expense may be lessened, and at the same time more sanitary disposal be obtained.

#### AMERICAN VIEWS FOR FRENCH HIGHWAYS.

**Expressed by Committee of American Engineering Societies in Response to Conclusions Submitted by French Engineers for Its Consideration.**

In December, 1918, and January, 1919, a delegation of American engineers visited France, at the invitation of the Congrès General du Génie Civil, to discuss with the French engineers the large engineering problems facing that country. The delegation consisted of six representatives from the Am. Soc. of Civil Engineers, and one each from the Am. Soc. of Mechanical Engineers, Am. Inst. of Electrical Engineers, and Am. Inst. of Mining Engineers. Six committees were formed, on Commercial Ports, Water Power, Navigable Waterways, Roads, Technical Education, and Agricultural Development. The report of the delegation to the several societies contains much matter of interest to American engineers.

The committee on Roads, consisting of Geo. W. Tillson, and Nelson P. Lewis, reported that a French committee on roads had submitted to it for consideration conclusions that may be briefly stated as follows:

Broken stone roads have ceased to be satisfactory for modern traffic, and must be abandoned for all roads carrying any large amount of travel.

Surface applications of bituminous materials have generally proved insufficient and only palliatives against dust.

Penetration bituminous macadam is very satisfactory, involving no great expense for plant.

Bituminous concrete (pre-mixed) necessitates a more or less expensive plant and increases the cost. "Experience extending over 10 years has demonstrated in the United States the ability of such surface to withstand heavy travel for 10 years or more, if carefully constructed, the latter point being essential."

The highest type of asphalt surface is that known as sheet asphalt. This type is the most desirable for main arteries if its construction can be financed and if it be properly maintained.

Asphalt surfaces have proved successful in all climates

from Canada to Cuba, and from cold and rainy New England to southern California.

Cement concrete pavements are of particular value in the neighborhood of cement plants. They possess the advantage that they can be used as foundations for other types of roadway after their original utility has gone.

Vitrified bricks of the best character are serviceable, but only near brick plants. They are much more expensive than the types previously mentioned and can hardly be considered in the road problem of France.

As a result of these considerations, the old system of French road surfacing must be entirely given up; but neither local nor central government can finance the reconstruction now. Therefore "the repairing of the road system can only be done through the medium of private enterprise which would find the capital, enter into agreement with the Communes, the Departments, and the State, and undertake the construction of some well determined portion of road, guaranteeing the maintenance of the same during a certain number of years, an annuity including the former yearly price of maintenance, increased by the present greater value, and even of an excess if justified by the improvement being provided for. It will be then advisable to ask the American engineers how the road budget problem has been solved in America, and to examine in what proportion we could apply in France the American solution."

In reply to this the American committee said:

Referring specifically to the tentative conclusions of the French members of the Committee, submitted at the first meeting held on December 20th, 1918, the American delegates would say as regards methods of construction:

1st.—That they heartily agree with the proposition that broken-stone roads have been found to be unsatisfactory for motor vehicles of heavy weight and great speed, and that, consequently, this method of construction should be given up for road surfaces carrying a large amount of traffic. This conclusion has been reached in America, and what is known as water-bound macadam is sometimes used, but only where a temporary roadway is required.

In arriving at this conclusion, the American delegates wish it to be clearly understood that they recognize fully the value of these water-bound macadam roads during the recent war; that, while they did suffer materially under a heavy traffic, their character was such that repairs could be quickly made, and the roads kept in almost continuous use. This, of course, was expensive, but, in times of war, quick results are necessary, rather than economy, and construction methods are perfectly proper and justifiable that would be very extravagant in times of peace.

2d.—That they fully agree with the conclusion that surface applications of bitumen to broken stone surfaces have not been satisfactory for heavy traffic, but that a more satisfactory surface known as "asphalt macadam" can be constructed by what is known as a "penetration" system, and that it can be laid in the way referred to so that good results can be obtained. In the construction of bituminous concrete pavements, a much more elaborate plant is required, which naturally makes the cost of the road surface more expensive. It is probable, however, that the extra cost is justifiable on account of the greater durability of this class of pavement.

In the memorandum it is stated that experience has demonstrated that this kind of pavement will stand heavy traffic for ten years or more, if carefully constructed. The American delegates think this is a rather optimistic view. It depends, however, on just what is considered "heavy traffic." The word "heavy," as applied to traffic, is a very indefinite one, for with the increased weight of trucks that have been in use during the last two or three years, what would have been considered heavy traffic five years ago would be medium traffic at the present time.

3d.—The statement that the highest type of asphalt surface is that constructed with a mineral aggregate of sand of very fine nature, to which a proper quantity of dust and asphalt is added, is undoubtedly correct for a city pavement. It is, however, exceedingly doubtful if such a pavement would withstand the heavy units of motor traffic that are in use at the present time and likely to increase in the future.

4th.—That, as to the use of brick for road construc-

tion in France, they feel some hesitancy in making any recommendations, as they are unfamiliar with the character of shales and clays in France.

The American delegates were asked for an expression of opinion as to the methods of financing road improvements in France, and the possibility of inducing private companies or contractors to undertake such work, receiving their compensation in a number of annual installments, fifteen such payments having been suggested.

It is probable that there are American companies or contractors who would be ready to finance road improvements with their own funds and accept payment in a number of annual installments—provided they are given entirely satisfactory guarantees of payment. It must be pointed out, however, that they would be obliged to borrow the money, thus paying a higher rate of interest than the State, and that they would expect a larger profit and a good rate of interest on all their carrying charges—so that the amount of work done for the same total expenditure would be much less than if they received prompt payment in full and release from their obligations. The credit of the State would be better than that of the private companies, and it would seem that it should be availed of, in order to secure satisfactory results with a minimum of expenditure and in the shortest possible time.

Special attention was called to the folly of providing funds for road improvement by the issue of long-term bonds, running for a period far longer than the life of the road surface, specific instances being given to show how costly such policies had proven. The plan of imposing assessments for the benefit of such improvements, so frequently followed in America, more particularly in cities, and the apportionment of the cost of the work between State, county and town, were described in considerable detail.

Our Committee also presented the following memorandum relative to American practice:

During the last few years in the United States the material used in road construction has been principally bitumen in its various forms, cement, concrete, and brick. The different methods in which bitumen has been used are known as the bituminous concrete pavements and bituminous macadam pavements.

A bituminous concrete pavement is one composed of broken stone, broken slag, gravel, or shells, with or without sand, Portland cement, fine inert material, or combinations thereof, and a bituminous cement incorporated together by a mixing method.

A bituminous macadam pavement is one having a wearing course of macadam with the interstices filled by a penetration method with a bituminous binder.

Bituminous concrete pavements are sometimes divided into three classes:

Class A.—A bituminous concrete pavement having a mineral aggregate composed of one product of a crushing or screening plant.

Class B.—A bituminous concrete pavement having a mineral aggregate composed of a certain number of parts by weight or volume of one product of a crushing or screening plant, and a certain number of parts by weight or volume of sand, broken stone screenings, or similar material, with or without a filler.

Class C.—A bituminous concrete pavement having a predetermined mechanically graded aggregate composed of broken stone, broken slag, gravel, or shell, with or without sand, Portland cement, fine inert material, or combinations thereof.

Sometimes, when a water-bound macadam pavement has been laid for some time and requires improvement, a thin coat of bituminous material is spread over the surface. While this cannot be considered a permanent construction, it has been used to quite an extent on light traffic roads with good results. It is especially good as a preventive of dust.

Which of the above kinds of pavement are to be used in any particular case must be decided by conditions, the principal ones being traffic, first cost, cost of maintenance, life of the pavement, and the availability of the material.

In considering the traffic, there must be taken into account, not only the volume of traffic, but also the units of traffic. It will be easily understood that 10,000 tons of traffic in units of 10 tons will injure a pavement more than the same amount of traffic in units of 1 ton. In the former case, the pavement must be given a solidity that will sustain the heavy units.

In considering the matter of cost, it must be remembered that first cost is not the only item that makes up the ultimate cost of the pavement, but that the cost of repairs must be carefully considered. Very often, a pavement, the

first cost of which is great, will be less expensive in the long run on account of the lesser cost of maintenance.

It is easily understood, of course, that the longer the pavement will last the cheaper it will be as a general proposition. It must also be remembered that certain materials, like bitumen, have a certain durability irrespective of traffic, while others, like stone, for instance, are worn out or destroyed only by traffic.

The availability of material is always an important consideration. It would be useless to think of a material for road work, which is at so great a distance from the point of use that the freight charges would make it too expensive. Often a poorer material should be used when, theoretically, a more expensive and more durable one would be advisable.

Although it was stated at one of the meetings of the Committee that conditions were such in France that brick and cement concrete could not be used to advantage, it was thought best by the American Committee to furnish information regarding these roads to the French Committee.

The Committee, too, would suggest a further trial of cement concrete for road work. It must be remembered that when any new type of road is first used, errors are apt to occur in construction, which give bad results, and, at first glance, it would seem to reflect on the material used, when, as a matter of fact, the trouble is in the method of construction. The character of cement concrete roads in America has been improved very much during the past five years, as a result of which large quantities are being laid in practically all the states doing road work. With the natural tendency of the French engineers to work carefully and to achieve good results, it is thought that possibly if another trial is given, taking into consideration American practice, results may be achieved that will be more satisfactory than in the past.

Brick roads have been used in the United States to a great extent, and very satisfactorily. In many portions of the country, stone or other paving materials are extremely scarce, and where a clay, or a clay mixed with shale, can be obtained that will produce a good paving brick, such pavements can be laid with satisfactory results. If, in France, clays or shale can be obtained that will produce brick that will stand the specifications provided for American brick, there ought to be but little fear in their use. It must be understood distinctly, however, that the brick must be good, in order to produce good pavements.

At a meeting held on January 3d, our Committee submitted numerous documents descriptive of the practice of road construction in the United States, and the manner in which road improvement is financed. These consisted of forms of contracts and specifications of the New York State Highway Department, covering the construction of all kinds of roads built in that State, a copy of the "Final Report of the Special Committee of the American Society of Civil Engineers on Materials for Road Construction and Standards for Their Test and Use," and proof sheets of several sections of the "American Highway Engineers' Handbook," then in press, containing exhaustive descriptions and discussions of materials and methods, as well as the manner in which such improvements are financed in rural and urban districts.

After an exchange of views the following conclusions were unanimously adopted and presented to the Congress:

1. Broken stone roads, which formerly were deemed suitable even for city streets, are soon damaged by motor vehicle traffic, to which they are not adapted. The tarring, which has mitigated the nuisance from dust, only very insufficiently preserves the road surface from the wear and tear due to the travel of vehicles with mechanical traction.

2. New systems of construction have been developed, the most successful, perhaps, being cement concrete and bituminous and brick surfaces. Experience extending over a sufficient number of years has shown that the preference to be given to one or the other of these various systems of construction depends on several factors: climate, intensity of travel, cost price, etc. The brick surfaces used in America could only be used in exceptional cases in France. Cement concrete roads are only advisable in countries where the materials used in their composition are at hand at advantageous prices.

3. Roads constructed with bitumen or asphalt aggregates are, unfortunately, very expensive, but they have the advantage of requiring less maintenance than broken stone roads. For an equal travel intensity, they answer much better the exigencies of the travel of motor vehicles.

4. The cost of laying these roads is considerably lowered when this system of construction is applied to broken stone roads, the old broken stone constituting a good foundation.

5. The reconstruction of the French road system is necessary on account of its great deterioration due to the travel during the war. It would be folly to restore this system as it was before, as it could not withstand the traffic of motor vehicles, which will grow rapidly to meet industrial and commercial requirements, as well as those of tourists, and the expense of maintenance of broken stone roads would greatly increase without giving satisfaction to those who use them. Happily most of the French roads will make excellent foundations to which it will be sufficient to apply appropriate wearing surfaces. Under these conditions, it will be possible to adapt the roads to the new requirements without incurring very great expense.

It would be logical that the expenses relative to the improvement and maintenance of the roads should be borne by those who use them, and the abutters who profit by the travel. This principle, admitted and applied in some foreign countries, permits the issue of bonds for the improvement of roads, the capital being guaranteed by taxes and revenues which are certain and which increase with the intensity of the travel, as, for instance, taxes on motor cars, on gasoline, etc. Unhappily, the fiscal laws in force in France do not allow this procedure, and, as it is not possible to count on voluntary contributions, it is necessary to have recourse to the budget of the State, "Departments," and "Communes," in order to obtain the necessary allowances to bring the road system to a state capable of meeting the new requirements.

If, however, the State, "Departments," and "Communes" could not find the necessary capital, private enterprises might be organized to undertake the construction of some well defined portions of roads, guaranteeing their maintenance during a certain number of years, with the proviso that an annuity including the old yearly price of maintenance increased to cover the new conditions, and a further sum representing the value of a prompt realization of the benefit of the improvement, should be provided, in addition to the cost of construction.

Though this proceeding may be more expensive than direct construction through the Public Works, it will be necessary, perhaps, to have recourse to it, on account of the circumstances created by the war.

The study of the financial question must be pursued in subsequent discussions, with the co-operation of persons qualified to give useful advice.

## HIGHWAY ENGINEERS AND EDUCATING THEM.

In an effort to find out to what extent the engineering schools of the country are equipped to meet the demand for highway engineers that is coming as a result of Federal and State road-building programs, the Commissioner of Education has sent a letter of inquiry to the presidents of universities and deans of colleges and schools of engineering. In his letter Dr. Claxton says:

"The United States and almost all the States are undertaking an extensive program in road building involving the expenditures of many hundreds of millions of dollars. The Federal Government has made large appropriations. States and counties are voting bonds in large quantities. The movement is comparable to that for railroad construction three or four decades ago. For the next 10 or 20 years there will be a demand for a large number of highway engineers of the best type, and unless they are supplied in sufficient quantity much of the money appropriated for roads will be wasted.

"Upon investigation the Bureau of Education finds that comparatively few higher institutions in this country offer definite curricula leading to a degree in highway engineering, although subjects relating to highway engineering are generally taught to some extent in connection with the usual civil engineering courses.

"Information in regard to courses offered in highway engineering and the number of students taking them will be of great value to the country at this time."

# The WEEK'S NEWS

**New Hampshire's Auto Headlight Law—New Jersey to Take Over Work of Slow Contractors—Townsend Bill Does Not Affect Federal Aid Work—Decisions of State Utilities Commissions—Lower Lighting Rates in Pittsburgh—Progress in Standardizing Fire-Hose Threads—A Profitable Municipal Savings Bank in St. Paul.**

## ROADS AND PAVEMENTS

### New Hampshire's Auto Headlight Law.

Concord, N. H.—New Hampshire's law regarding the dimming of auto headlights on highways has given problems to some of the officials charged with its enforcement. The law provides that

The light from the front lamps shall be sufficient to be visible at least 200 feet in the direction in which the motor vehicle is proceeding, and all motor vehicles equipped with electric headlights shall also be equipped with some device to dim the glare or to scatter the rays of light from the same, which shall have been approved by the commissioner of motor vehicles, and it shall be the duty of any person having control, or charge, of a motor vehicle which is equipped with electric headlights to dim or extinguish such headlights when approaching an electric street railway car or another automobile.

Commissioner of motor vehicles, Olin H. Chase, has spent much time in consideration of a satisfactory rule for dimming lights, and while he says that he is aware that no regulation which he has been able to devise will settle the problem of glaring headlights, he has devised a rule which he believes is the best that can be framed under the circumstances. This is:

No person shall use on a motor vehicle operated on the public highways of the state of New Hampshire any lighting device of over four candle power equipped with a reflector unless the same be so designed, deflected or arranged that no portion of the beam of reflected light, when measured seventy-five feet or more ahead of the lamps, shall rise above forty-two inches from the level surface on which the vehicle stands under all conditions of load.

Spotlights shall not be used except when projecting their rays directly on the ground and at a distance not exceeding thirty feet in front of the vehicle.

In an official circular promulgating this rule the commissioner says:

The methods of regulation which have been experimented with in other states may be divided into two general classes:

First—Giving each dimming or diffusing device submitted an official test and approving or disapproving it upon that test.

Second—Fixing a limit of the distance from the ground to which the light cone may be permitted to rise.

The most conspicuous fact in connection with both of these methods is that neither is satisfactory. There are about sixty different dimming and diffusing devices on the market, and in passing upon most of them it is necessary to take into consideration the candlepower and focus of the lamps used in order to obtain satisfactory results. Study and experiment have led the highest authorities to adopt forty-two inches as a safe height to which reflected light may rise seventy-five feet ahead of the car.

The commissioner has chosen the second method, not because it affords a complete solution of the problem, but because it promises more of remedy and less of difficulty than the first method.

### Plans for Making English Highways Safe.

London, England.—In a report on desirable reform for improving public highways, the road committee of the Institution of Municipal and County Engineers, declare that for the purpose of dealing with dangerous corners, special powers should be conferred upon highway authorities as follows: (a) Power to require an additional setback of all new buildings at junctions or intersections of roads or streets beyond the general line of frontage to such extent as the authority may deem necessary for the purpose of providing a view of approaching traffic; (b) power to prescribe the height and character of the fencing enclosing land at junctions or intersections of roads or streets or of any erections thereon. For the purpose of improving existing dangerous corners: (c) Power to acquire any necessary land; (d) power to require the removal, pulling down or setting back of any buildings, erections, trees, hedges or fences, or lowering any banks which obstruct the view of approaching traffic; (e) the power to require the owners or occupiers of land at the junctions

or intersections of streets or roads to keep down all line fences and trees to a prescribed height, and prescribe the character of fences to be erected or maintained thereupon. Failing agreement between any road authorities concerned in the application of the foregoing powers, the local government shall act as arbitrators. With regard to trees and hedges upon and adjoining highways, the committee is of the opinion that Section 65 of the Highway Act of 1835 should be amended in the direction of giving power to the highway authority to require the pruning or removal of trees, hedges or other obstructions to the full and safe use of the highway. The committee is of opinion that the law of extraordinary traffic needs simplifying and amending, particularly in the method of recovering damages."

### State Will Take Over Jobs of Slow Contractors.

Trenton, N. J.—Where contractors having work in the construction of the new state highway lag behind in the completion of their contracts, the state highway commission has decided to take over the work from such firms. This decision was reached as the result of the slow progress on the Atce-Ancora, Camden County, section of Route 3, of the new highway system. One more inspection was ordered to be made by highway engineer William C. Thompson, and should he find the progress to be as halting as it has been, then the commission will order the continuation of the contract stopped. Another newly announced policy is the decision to require every contractor submitting an estimate for state highway work to accompany his bid with a certified check for ten per cent of his estimate, as well as a bond from some reliable surety company as proof of his intention and ability to complete the work. In cases where the work is to be done by a county, the contractor may have the alternative of posting as low as \$1,000 or putting up personal security. The commission has announced that it is to receive from the federal government for road building purposes 212 army trucks. The commission will probably ask for a law next winter which will permit it to give some of the machines to the county road departments for their use.

### Townsend Bill Sponsor Finds No Conflict with State-Aid Law.

Washington, D. C.—According to the opinion of Senator Townsend, author of the Townsend national highway bill, the legislation will have no effect on federal state-aid work. In a letter sent to S. M. Williams, chairman of the Federal Highway Council, he says: "Replying to your inquiry concerning my views as to the effect of the passage of the so-called Townsend national highway bill upon the present or future of the federal state-aid law, now in existence, I hasten to say that such effect cannot be by any possibility detrimental to the state. The object of the bill introduced by me is to establish and maintain a national system of highways, according to a national plan, connecting the different states of the Union, and affording an example of proper highway construction, which will be beneficial to the states. The bill does not in any manner injuriously affect existing law; in fact, it provides that the commission created under it shall have charge of the federal-aid law, and shall make reports annually to the Congress as to what is being accomplished under existing law, and make such recommendations for the future as the operation of the law and its results seem to make necessary. The two systems of road building are separate and distinct, except that they are under control of the same federal commission. The appropriations, however, cannot be mingled, and the results will be known and properly appraised by the people from time to time. If the present federal-aid law proves satisfactory, it will, as a matter of course, be con-

tinued, and probably enlarged; if the proven results are not satisfactory, that law will be discontinued. And what I say of the federal-aid law will be true of the bill now pending before the senate. The commission appointed under the law, it may be safely presumed, will be high-grade men, representing different sections of the country, and their lifework will be to serve the people by furnishing the best possible highway transportation facilities."

## STREET LIGHTING AND POWER

### Commission Allows Higher Rates.

Boyerstown, Pa.—A decision of the Pennsylvania Public Service Commission, dismissing a complaint against proposed increases in rates of the Boyerstown Electric Company, states: "The former rates were apparently satisfactory, and predicated upon that fact the net income derived under them could not be maintained to have been unreasonable or excessive. The companies' figures for 1918 show a net return for that year considerably lower than in 1915 and in 1917. It therefore would appear to be reasonable to presume, in the absence of definite and conclusive evidence to the contrary, that the respondents should not be restrained, under existing operating conditions, from applying rates that are earning a lower net revenue than the companies obtained under the old tariff. From the position taken by respondent in defending its action it would appear that the tariff under attack was filed to provide an emergency rate to continue in effect at least during the period of the high prices recently prevailing. Counsel for respondent so maintained in his brief. This in substance is implying that when the cost of labor and materials resumes a normal and stabilized level there will be a revision of rates filed under a new tariff. The commission accordingly finds under circumstances now controlling that the complaint should be dismissed, with the privilege accorded to complainants to file a new complaint, if they so desire, should the present rate be continued when expenses for operation and plant maintenance have fallen sufficiently to indicate that the net earnings of the respondent may show a material increase per annum."

### Valuation of Unused Water-Power Site.

Charleston, W. Va.—A recent decision of the state public service commission takes up the question of valuation of unused water-power sites and of a steam plant constructed by the Appalachian Power Company. The commission handed down a decision in part as follows: "It appearing that a reasonable forecast of the development of the business of applicant justified the acquisition of said unused sites at the time the same were purchased, we are of opinion that the value of said unused sites should be carried as a deferred capital charge, and, when put into use, charged to capital investment at the original purchase price plus the accumulated interest upon said investment, and that the applicant's consumers using the energy generated from said sites should be required to pay a reasonable return thereon rather than ratepayers of the present period. . . . We are unwilling to undertake to substitute our judgment for the business sagacity and foresight of the managers of the applicant company which dictated the construction of this steam plant at this time. It does appear from the evidence that the applicant has been able to supply the demands of all of its present consumers from its plant capacity now installed; that the demand during the past year amounted in round numbers to 95,000,000 kw.-hr. However, a reasonably prudent regard for power requirements incident to the rapid development of the region in which the applicant operates would, in sound business judgment, require that the capacity of the applicant be kept somewhat in advance of the immediate demands of its consumers. The applicant as a public service utility is required to be ready to supply adequate service and facilities upon reasonable terms and conditions to

all who apply therefor within the territory served by it, and its failure to maintain a capacity slightly in advance of its immediate requirements would render it incapable of performing its public duty in this respect. We are unable to say from the evidence that the applicant, when this plant is completed, will have a greater capacity than a proper regard for the demands of its present and prospective consumers will require, but inasmuch as the applicant is entitled to charge as a part of its capital investment interest upon its incomplete construction, we are of opinion that the investment in such incomplete construction should not be made a part of the rate base as to present consumers until actually put into operation."

### Commission Opposes Valuation at War Prices.

Springfield, Ill.—A joint petition of the Southern Illinois Light & Power Company and the Centralia Gas & Electric Company for authority to purchase and sell electric and gas property of the Centralia company has been dismissed by the Illinois Public Utilities Commission. On the question of war-time prices, the decision says: "The commission cannot subscribe to a valuation which is based upon war-time prices in a case where substantially no investment has been made under war-time conditions. To do so would result in burdening a public already carrying a heavy load of war-time prices with increased costs of service received from plant and equipment which has experienced no added usefulness because of the war-time situation. Such a burden so placed could benefit only the interests selling the property, to the permanent disadvantage of the public which receives the service and the utility which would assume the responsibility of operating it upon a financially sound basis. We do not wish to be understood as condemning investment wisely and prudently made in the necessary development of utility property during war times. In many cases extensions and betterments have been made in the interests of the public good under these unusual and trying conditions. Capital so invested is entitled to consideration, but such does not appear to be the case to any marked extent in the present case."

### Lower Rates for Street Lighting Contract.

Pittsburgh, Pa.—Special city counsel C. K. Robinson has reported on the agreement reached between the city and the Duquesne Light Company, whereby the city consented to withdraw its suit against the company. The suit was instituted to compel the company to reduce the rates. The chief points of the agreement are: Arc lamp prices per annum reduced \$7.50 for overhead circuits and \$10.50 for underground circuits. Annual saving to city at same coal price more than \$40,000. New specifications providing for replacement of obsolete lamps and increased use of incandescent lamps in accordance with prevailing tendency. Residence rates reduced approximately 50 per cent and now as favorable with any other comparable city. Commercial light and power rates reduced approximately 7 per cent. Saving to consumers estimated by company as \$600,000. In the negotiations leading to the recent rate reduction the company promised to set aside an adequate depreciation allowance, replace or discard obsolete equipment, maintain the properties properly, build a large efficient generating station at Cheswick; make further rate reductions commensurate with the economies effected; furnish city officials freely with information concerning the company's statement that it is now keeping their accounts in complete accord with public service commission's standard accounts will provide valuable and hitherto unavailable knowledge for future negotiations with the company. An understanding was reached with the president of the company that property purchased from surplus earnings would not be included in the total capital upon which the company should receive a return valuation of plant equipment. An examination of a large part of the company's equipment has been made and considerable information collected of its age and condition. From this has been calculated the approximate cost of this part of the company's property,

which information has been made available for further use. The company is to do the following things:

Replace several hundred obsolete arcs now in use with modern arcs as provided in street lighting contract.

Expend larger sums for maintenance to make up for deficiencies during war period due to lack of labor.

Improve Brunots Island power station by replacing any obsolete inadequate equipment with modern equipment. Increase present capacity of boilers, feed water heaters and super-heaters, and secure further operating economies in ash handling arrangements.

Complete new power station at Cheswick as promptly as possible and thereupon shut down the present smaller and less efficient generation stations and dispose of the portions not needed for sub-stations.

The following things are to be done by the city: Provision should be made for an organization which could deal with all phases of public utility supervision and regulation. This is especially important in view of the promises made by the company respecting its future policy in the matter of maintenance, replacement of obsolete equipment, new construction and in the matter of financial policy. Maj. Clayton W. Pike was the consulting electrical engineer in the city's negotiations.

#### English City Gas Plant Makes Profit Despite War.

Nottingham, England.—The annual report of Nottingham's municipal gas plant for the year ended March 31, 1919, shows that the total income of the undertaking amounted to \$2,280,383 and the expenditure to \$1,817,932, leaving a balance of \$463,451. To this sum has to be added \$148,175 brought forward from last year and bankers' interest amounting to \$38,236, a total of \$648,862. After deducting the interest on capital and contributions to sinking funds and allowing \$17,500 for depreciation of stores there is a balance of \$341,763 at the disposal of the municipality; this will be applied toward the reduction of the city taxes. There were 132,008 tons of coal and 77,009 gallons of oil utilized to manufacture 1,739,386,000 cubic feet of coal gas and 73,284,000 cubic feet of water gas, 60,357 tons of coke, 7,401 tons of tar, and 18,959 tons of ammoniacal liquor. In addition 394,862,000 cubic feet of gas were purchased from the government, which had taken over one of the local gas plants for munition purposes. The total quantity of gas available for consumers was thus 2,207,532,000 cubic feet. The quantity sold was 2,059,370,900 cubic feet, a decrease of 185,299,400 cubic feet, compared with the preceding year, and a decrease of 191,931,800 cubic feet, compared with the last pre-war year. Gas sold for public lighting was 13,083,800 cubic feet, contrasted with 102,143,500 cubic feet for the year ended March 31, 1914. The gas unaccounted for during the year was 148,161,100 cubic feet, of 6.71 per cent, compared with 65,857,700 cubic feet, or 2.85 per cent the previous year. The total length of mains laid at March 31 last was 408.05 miles. There were 143 new gas services connected to the mains, as against 306 the previous year. The meters installed to March 31 numbered 84,215, an increase of 401. The number of public lamps erected at March 31 was 8,182. In use are 35,447 gas cooking stoves, 20,243 gas fires, and 807 gas engines. It may be noted, in connection with the above report, that the coal used at present in the manufacture of gas costs \$5.60 per ton, as against \$1.96 in 1914, fire brick \$44.40 per 1,000, compared with \$15, and timber (deals) \$265.20 per standard as against the immediate pre-war price of \$70.53.

#### Jurisdiction of Commission Over Inter-Utility Service.

East St. Louis, Ill.—The Illinois Public Utilities Commission has decided that the intent of the law is to give it complete jurisdiction over every product or commodity sold by a public utility for any purpose whatsoever so long as this product and commodity partakes of the nature of a public utility service or directly or indirectly exerts an influence upon such a service. This point was raised in a case in which service was furnished by one company to another. The contention is made that the furnishing of service by the East St. Louis Light & Power Company to the St. Clair County Gas & Electric Company is not a public utility function. The commission declares it cannot subscribe to this theory. While theoretically the St.

Clair County Gas & Electric Company may be free to contract for service of this character with any other public utility in the state, as a matter of actual concrete fact this latitude of choice does not exist for the reason that other public utilities may not operate within a reasonable distance and may not render service of a suitable character practically applicable to meet the requirements of the situation. The contention is also made that the public is in no way interested in such contracts. It would appear, however, that the interest of the public is a very direct and vital one. It would be entirely possible and in some cases the circumstances have arisen that the contracts entered into between two public utilities have been entirely unjust and unreasonable and have placed an undue burden upon the one or the other. This burden, if of sufficient extent, as it may be, might operate to place the public utility in such financial difficulties that the rendering of adequate service to the remainder of the public would be impossible. Certainly it is the intent of the law that under such circumstances the commission should have the right to intervene and adjust the contract upon an equitable basis so that as a net result the public will receive service of an adequate and sufficient character, while the public utility shall continue to live and operate with reasonable profit. It is the intent of the Public Utilities Commission law to give the commission jurisdiction over a public utility sufficient to protect the public in all features of the service rendered and the rates charged. Should it develop as a result of a contract of this character that the inter-utility service furnished is inadequate, subject to interruptions, or in any other way unsuitable for meeting the public convenience and necessity, it is the apparent intent of the law that the commission shall have the full right to determine the facts and order such modifications of the contract or the methods of operation of the properties as will result in the securing of service for the public which shall meet its necessity and convenience.

#### Municipalization of Part of Electric System.

Hooverville, Pa.—A recent decision of the Pennsylvania Public Service Commission, affecting property of the United Light, Heat & Power Company here, holds that a borough may condemn and acquire the transmission system, transformers, poles, wires, etc., of a public service company for the purpose of lighting its streets and for supplying electrical energy to the public without taking over that part of the system which lies beyond the borough limits. It appearing to the commission that in the present instance the acquisition of the electrical system was necessary and proper for the service, accommodation, convenience and safety of the public, the commission approved of the same and ordered that a certificate of public convenience be issued.

## MISCELLANEOUS

#### Standardizing Fire Hose Threads.

New York, N. Y.—According to a statement by the Committee on the Standardization of Fire Hose Threads of the National Board of Fire Underwriters, "in every conflagration there have been cases where aid from adjoining cities has been valueless because the hose threads of the two cities were different and the apparatus could not connect to the hydrants. In the Baltimore conflagration, for example, when engines arrived from other cities to assist in extinguishing the fire, it was found that many of them could not connect with the Baltimore hydrants, and, consequently, were useless. More recently, a conflagration at Mobile, Ala., made rapid headway partly because of the time lost in trying to connect up hose brought from nearby shipyards, which did not have the same thread as the city hydrants. Many makeshift schemes have been adopted, such as providing adapters by which the visit-

ing apparatus could be connected to the hydrant. In the stress of fire these have often been misplaced or have been insufficient in number, or in other ways have proven unsatisfactory, and it has been recognized for many years that the only solution was to change existing couplings to the National Standard and thus have cities equipped with hose threads of the same dimensions. Results recently accomplished by engineer J. H. Howland, of the Committee on Fire Prevention and Engineering Standards, conclusively indicate that the field work of standardizing fire hose threads is not only practicable, but in the very near future is destined to assume country-wide proportions. Ten days' field work in May last resulted in converting to the National Standard the existing threads on all hose couplings, hydrant nipples and caps, play pipes, special connections to fire equipment in the municipalities and protected manufacturing plants of High Bridge and Lambertville, N. J., and New Hope, Pa. In all, 191 pairs of hose couplings, 84 special fittings and 219 hydrant outlets were made standard. Including hydrant caps and combination fittings there were close to 850 threaded parts rechased and made to conform exactly with the National Standard thread. With an average of three men handling the standardization tools this work was accomplished in approximately seven days' actual working time. This field work was the first real test of the practical application of specially prepared tools, consisting of taps, dies, expanders, vises and accessories. While the actual work of standardization was completely accomplished, difficulties met with indicated that there was an opportunity so to perfect the tools as to save a lot of time and laborious work. The tools in many respects have since been redesigned and added to, so that they are now believed to be about as nearly "fool-proof" as possible. Trial tests in the shops at least show that the perfected tools do the work in much less time and with greater ease. Arrangements are now being made in co-operation with state fire marshal H. H. Friedley to standardize completely the fittings in several of the protected cities and towns in Indiana, with a view to starting a well-organized movement to standardize the entire state. From even more encouraging results, which there is every reason to believe will shortly be obtained in Indiana, it is expected that similar movements will then be initiated in many sections of the country, in which case it may be truthfully said that the long hoped for standardization of fire hose threads has 'gone over the top' with flying colors."

#### Municipal Bank Saves Money for City.

St. Paul, Minn.—The "municipal savings bank" of this city had deposits totalling \$3,635,000 on July 1, 1919, after six years of operation. The "bank" is operated by one clerk. It accepts deposits and issues 4 per cent certificates redeemable on demand and with interest, whether the money has been on deposit a day or a year. For the investment of its deposits the "bank" buys tax certificates and bonds of the city, particularly at times when the city would have to pay high rates for loans through commercial channels. Within the past 12 months the "city bank" has taken \$100,000 of 4½ per cent, 30-year water bonds, \$600,000 of 4½ per cent school bonds and \$750,000 of 5 per cent tax levy certificates, which, it is stated, were not commercially marketable at those rates. It is reported that the water-bond transaction alone will save the city \$105,000 of interest charges.

#### City to Make Industrial Survey.

Ore., Portland.—An industrial survey of the city has just been undertaken to find out what the city lacks which would make it more attractive than other coast ports as a location for industries. The city council, the commission of public docks and the port of Portland Commission have jointly appropriated \$30,000 with which to carry on the investigations. Two important features are definitely expected to be added to the city's industrial assets as a result of the survey: Provision of a belt line railroad and the development at public expense of a large tract of land suitably located, with respect to rail and water terminals, for manufacturing purposes. Factory sites, with all public facilities, will then be leased or sold by the city at a nominal price.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Readvertisement for Bids on Sewer Construction—Limit on Contract Price—Delay.

(Mo.) Where a municipal board advertised for bids for construction of a sewer and, after rejecting bids received under two advertisements, accepted the best bid and awarded the contract upon the third advertisement, at a price higher than lowest bid under first advertisement, its action was valid where taken in good faith.—Heman Const. Co. v. Lyon, 211 S. W. 68.

Where the charter in force did not limit the contract price for the construction of a city sewer to the amount of the estimate in the absence of a showing other than of good faith on the part of the board, the contractor should not be deprived of his right to be paid by enforcing special tax liens for an error in the board's judgment, where the actual cost of construction exceeded the estimated cost.—Id.

A contractor who has entered into a contract for construction of a sewer with reasonable promptitude and proceeded speedily to do the work in compliance therewith should not be defeated upon his claims under tax liens therefor on account of delay of the board in letting the contract not occasioned by the contractor.—Id.

#### Acceptance of Sewer—Violation of Contract—Defective Specifications.

(Ore.) Payment by city for work accepted by it under sewer contract, under the honest belief that work was done in the manner required by the contract, did not release the surety—City of Seaside v. Randles, 180 P. 319. Where sewer contract expressly stipulated that inspector or engineer was without authority to accept or reject the work when not done according to the contract, contractor had no right to suppose that the city engineer or inspector was authorized to permit any deviation from the contract.—Id.

In city's action against sewer contractor for failure to construct sewer according to the contract, it was no defense that the plans and specifications were defective, and that sewer, if constructed in accordance therewith, would have been worthless.—Id.

The acceptance of work by municipality is only *prima facie* evidence that the work has been done in substantial compliance with the terms of the contract.—Id.

That work on a sewer contract was performed in the absence of city engineer or inspector in violation of a contract, without objection by either inspector or engineer, was not a waiver by city of defects in the work, although the engineer or inspector knew work was being imperfectly done, where contract provided that engineer and inspector should not have authority to accept or reject work not performed according to the contract.—Id.

That city did not see fit to reconstruct sewer in precisely the same manner and according to the same plans and specifications under provision in contract giving it the right to so do upon contractor's breach did not affect the right of the city to recover damages for breach by contractor.—Id.

#### Negligence of City Employees Cleaning Sewer—City Liable for Injury.

(Ga. App.) While municipality is not ordinarily liable to private citizen for injury from negligence of board of health employees while engaged in work connected with preservation of public health, yet if negligence of employees of board of health, paid directly by city, in cleaning out a sewer and leaving an iron lid in opening in sewer under sidewalk so as to create a dangerous defect or destruction in sidewalk, with resulting injury to one exercising due care, it is liable.—City Council of Augusta v. Cleveland, 98 S. E. 738.

## NEWS OF THE SOCIETIES

**Sept. 23-26.**—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. Annual convention, Chicago, Ill. Secretary, Clarence R. George, Houston, Tex.

**Sept. 30-Oct. 1-3.**—NEW ENGLAND WATERWORKS ASSOCIATION. Annual meeting, Albany, N. Y. Secretary, Tremont Temple, Boston, Mass.

**Oct. 1-4.**—NATIONAL SAFETY COUNCIL. Eighth annual congress, Cleveland, Ohio.

**Oct. 21-24.**—ILLUMINATING ENGINEERING SOCIETY. Annual convention, Chicago, Ill.

**Oct. 27-30.**—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual meeting, New Orleans, La. Secretary, A. W. Hedrich, 169 Massachusetts ave., Boston, Mass.

**Oct. 29-31.**—CITY MANAGERS ASSOCIATION. Sixth annual meeting at Indianapolis, Ind. Secretary, Harrison G. Otis, Tribune Bldg., New York City.

**Nov. 12-14.**—AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS. Annual convention, New Orleans, La. Secretary, Charles C. Brown, Springfield, Ill.

**Feb. 9-13, 1920.**—AMERICAN ROAD BUILDERS' ASSOCIATION. Annual convention, Louisville, Ky. Secretary, E. L. Powers, 150 Nassau street, New York.

### American Water Works Association.

Beginning with October 15, the office of the secretary of the society will be located at 153 West 71st street, New York City, instead of at Troy, N. Y., its present location.

An energetic campaign for new members is being conducted by the Membership Committee, F. C. Jordan, chairman, in an effort to increase the membership from 1,350 to 2,500. The society has decided to enlarge its activities, which will require more money; but instead of increasing the dues, will endeavor to increase the membership to meet the greater expenditure. There are estimated to be 7,500 waterworks officials, engineers, health officers and others who would make acceptable members of the society, and the enrolling of one-third of them is not believed to be impossible.

One of the additional expenditures is for the purpose of increasing the number of issues of the "Journal" of the society from four to six. Also larger funds are placed at the disposal of the special committees so that their research work and preparation of reports may be carried on more expeditiously.

Ballots have been distributed for votes for members of the Nominating Committee, the polls for which close at noon October 20.

Following are the members of the Nominating Committee nominated at the last convention, representing the districts of the Association:

District 1—Frank A. Barbour, Cons. Engr., 14 Beacon street, Boston.

District 2—Lyman P. Hapgood, superintendent water, Jamestown, N. Y.

District 3—George C. Gensheimer, secretary water commissioners, Erie, Pa.

District 4—Henry B. Morgan, manager water works, Peoria, Ill.; C. W.

Wiles, superintendent water works, Delaware, O.

District 5—Francis T. Cutts, assistant water commissioner, 34 East Grand avenue, St. Louis; Chester R. McFarland, manager water works, Tampa, Fla.

District 6—F. W. Cappelen, city engineer, Minneapolis, Minn.; J. Chris Jensen, municipal water works, Council Bluffs, Ia.

### Association of Ohio Technical Societies.

A state convention of the engineers and architects of Ohio will be held in Columbus, Ohio, on October 14 and 15 under the auspices of the Association of Ohio Technical Societies. Four principal subjects will be advanced. M. O. Leighton, chairman of the Engineers', Architects' and Constructors' Conference, will speak on "The National Department of Public Works"; Dr. F. H. Newell, of the American Association of Engineers, will speak on "Closer Co-operation in the Engineering Profession"; Charles Whiting Baker, consulting editor of the Engineering News-Record, will address the convention on the "Compensation of Engineers and Architects"; and Professor Gardner S. Williams of the University of Michigan will discuss the "Registration of Engineers and Architects."

### American Association of Engineers.

The North Carolina Society of Civil Engineers has voted to proceed with consolidation with the American Association of Engineers, and to carry out the affiliation as soon as the committee appointed to conduct the negotiations has completed its work. The president of the society is Dr. W. C. Riddick, president of North Carolina State College.

A 32-page progress report issued recently by the railroad committee of the American Association of Engineers contains the entire story of the negotiations which have been carried on by the association relative to increased salaries of railroad engineers, and which have been highly successful. The salary case of the railroad professional engineer was championed for the first time last October, when the association asked the Wage Board of the administration for a hearing at which the claims of these engineers might be presented. This hearing was finally obtained last March, just after a conference had been held in Chicago by the association, at which several hundred engineers adopted schedules of salaries for various positions which were underpaid. The hearing resulted in favorable action by the Wage Board, and the point was almost reached where the board was to issue a wage order placing new salaries into effect over the entire country. The movement for higher salaries looked like a complete success. Then came the blow. The administration took

the matter out of the hands of the Wage Board. The Director of the Division of Operation advised national headquarters of A. A. E., however, that regional directors had been given authority and instructions to make proper adjustments of salaries in their respective regions. It was then necessary to conduct independent negotiations with each regional director. This occupied the railroad department of the association for almost three months; until, finally, the Northwestern Region issued the first order which had been issued in any region and which granted increases in salaries which brought the new rates approximately up to those which had been recommended by A. A. E. Since then the Eastern Region has announced that its new rates for professional engineers are ready in the rough, although they are not yet printed for distribution. Results are expected also in two other regions before the first of October. The report gives a resume of the history of the case to date, including reproduction of some of the correspondence. It will be mailed to interested persons who send in their names to national headquarters at 63 East Adams street, Chicago.

The most recently organized chapters of the American Association of Engineers are the Springfield, Mo., chapter, and that at Fresno, California. E. T. Bond is president of the Springfield chapter, and L. E. Smith is president of the Fresno chapter.

The committee of the American Association of Engineers on salaries of engineers in public service has been increased by the addition of J. H. Prior, consulting engineer of Chicago, who is also a member of the board of directors of the association. The municipal section of this committee has been partially organized with S. C. Hadden, editor of Municipal County Engineering, as chairman. The remainder of the committee will consist for the present of municipal engineers chosen with a view to giving adequate representation to every part of the country. The state highway engineer section has completed a tentative compensation which will be soon sent generally to highway engineers through the United States for suggestion and criticism. Plans are being formulated for the organization of another section, which as well as the state highway engineer section will be headed by A. N. Johnson, consulting highway engineer of the Portland Cement Association. It is expected that the state highway engineer schedule will be made public in November. The municipal schedule, it is hoped, will be ready for publication in December.

### Associated Engineers of Spokane.

The affiliated society of engineers that was organized in Spokane, Washington, several years ago, at a recent meeting changed the name from the Spokane Engineering and Technical Association to the Associated Engineers of Spokane, Washington.

## INDUSTRIAL NEWS

### Westinghouse Company Building Workers' Homes.

Due to the difficulty the employees of the WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY have experienced in getting homes near the East Pittsburgh Works, the company has resumed the home building program that was postponed during the war and forty-eight houses are now under construction. The site for the new dwellings is on a plot of 109 acres owned by the company and located in Wilkins township along Ardmore Boulevard.

The new houses will form a part of the general building plan for developing the entire tract. It is estimated this tract will furnish homes for six hundred families.

Sidewalks and pavements will be laid, and gas, water and electricity services will be installed. The houses, which are modern in construction, will be of brick with hollow tile backing, with concrete cellars and cement porches. They will consist mainly of five, six and seven room houses designed to meet the needs and the pocket-book of the man in moderate circumstances and will be sold at cost on easy terms to the employees of the company. A number of the dwellings will be for rent.

In building the new homes an effort has been made to do away with features that have outlived their usefulness. The antiquated parlor is missing and the center hall has been replaced with a modern living room, which is more economical of space. However, the plans are subject to change, as the dwellings are designed to meet the approval of the future occupants,

whether owners or tenants. Those in charge of the building program have made a careful study of the war-time houses erected by the Housing Commission, especially those built in the Philadelphia district for the use of the employees of the Essington Works.

The Westinghouse Company is one of the pioneers in building homes for its employees, having constructed seventy-two homes near the Trafford Foundry almost ten years ago. It owns 127 apartments and homes in Trafford proper. It is probable that the building scheme at present under way will later include apartments and duplex houses. T. P. Gaylord, vice-president of the Westinghouse Company, is in charge of the building program. Bernard H. Prack, the architect and builder, expects to have the first of the houses ready for occupancy by October first.

## NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

### New Ash and Garbage Trailer.

A new trailer to be used for collecting ashes and garbage and also for hauling dirt, sand and crushed

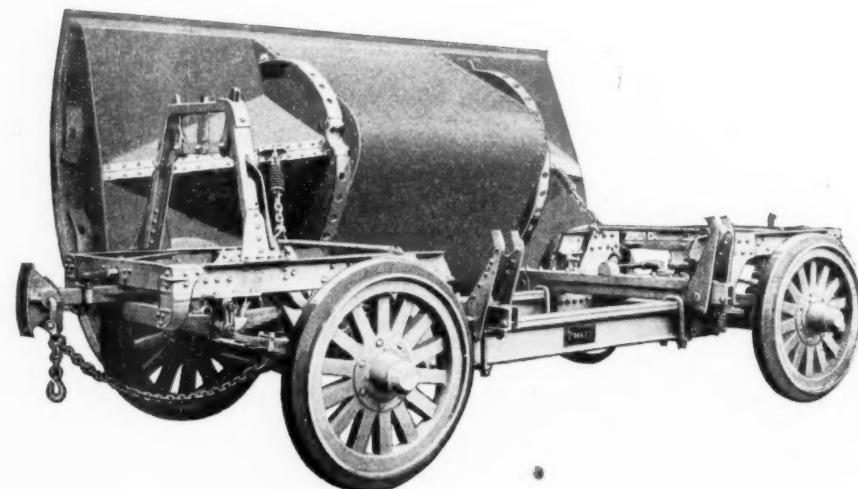
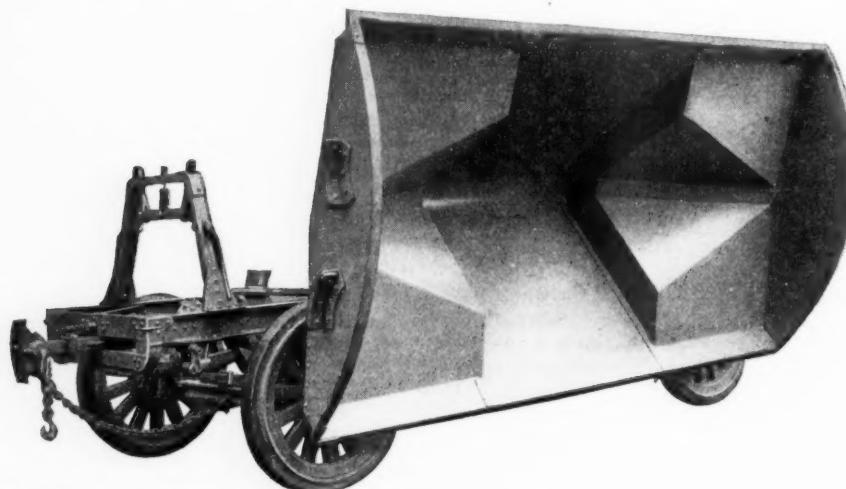
These trailers are fitted with a tongue attachment so that horses can be easily and quickly hitched to them, or unhitched from them when the

trailers are to be picked up by a tractor to be transported to the dump, incinerator or other place of disposal. The wheel base is short, 115 inches, which makes it easy to turn into alleys or narrow streets.

Some of the more important dimensions and details are as follows: Capacity, 6,000 pounds, 44 cubic yards. Tread, 63½ inches. Ground clearance, 12 inches; frame length, 175 inches. Height of frame, 18 inches at the center and 32¾ inches at the ends. Loading edge of body, 60 inches above the ground. Axles, drop forge. Bearings, double cage roller. Springs, 2½-inch by 44-inch best grade spring steel. Wheels, standard artillery with hickory spokes. Tires, 36x5 solid rubber pressed on. Loading space, 66¾ inches at the center and 54½ inches at the ends. Overall width, 80 inches. Turning radius, 28 feet 3 inches, outside wheel. Weight, chassis 3,530 pounds, body 1,900 pounds, total 5,430 pounds.

ABOVE, VIEW OF INSIDE OF TRAILER, DUMPED. AT THE RIGHT, VIEW OF OUTSIDE OF BODY, DUMPED.

One has been placed on the market by the Troy Wagon Works Company, of Troy, Ohio. The body is of steel, made to stand the hard usage to which this service subjects it, and is water-tight. One of the principal features is that the height of the sides of the body from the ground is only sixty inches. This is made possible by the drop frame. This makes it easy to shovel material into the body or raise ash and garbage cans for emptying them into the same. The load is dumped by gravity, no power being needed either to dump it or to return the body to an upright position after dumping. The body discharges the load outside of the wheels.



# ADVANCE CONTRACT NEWS

## ADVANCE INFORMATION BIDS ASKED FOR

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

## CONTRACTS AWARDED ITEMIZED PRICES

### BIDS ASKED FOR

#### STREETS AND ROADS.

**Ala., Rockford.** **Sept. 25.** 3.2 mi. and 1.5 mi. roads in Coosa Co.—W. S. Keller, State Hwy. Engr., Montgomery.

**Ala., Scottsboro.** **Oct. 6.** Grading, draining and surfacing with stone 6 mi. road in Jackson Co., involving 6,354 cu. yd. earth excavation, 319.18 cu. yd. concrete, 13,978 lbs. reinforcing steel, 134 lin. ft. 18 and 24-in. pipe, 9,393 cu. yd. stone surfacing, etc.—W. S. Keller, State Hwy. Engr., Montgomery.

**Ala., Talladega.** **Sept. 26.** Grading, draining and surfacing with top-soil 5.7 mi. road in Talladega Co.—W. S. Keller, State Hwy. Engr., Montgomery.

**Ga., Athens.** **11 a.m., Sept. 23.** 3.7 mi. concrete or bituminous paved road.—E. L. Giggs, Proj. Engr.

**Ga., Trenton.** **10 a.m., Oct. 2.** 9.8 mi. fed. aid road in Dade Co., involving 12 acres clearing and grubbing; 44,000 cu. yd. excav.; 1,050 cu. yd. concr. in headwalls, culverts and bridges; 18,300 lbs. steel reinforcing in bridges and culverts, 1,400 lin. ft. vitr. clay pipe culverts and 25,000 cu. yd. sand clay surfacing. Also 2.4 mi. fed. aid road, involving 1 acre clearing and grubbing; 26,000 cu. yd. common excav.; 6,000 cu. yd. rock excav.; 120 cu. yd. concr. in headwalls, culverts and bridges; 1,050 lb. steel reinforcing in culverts and bridges; 6,250 cu. yd. sand clay surfacing, and 450 lin. ft. vitr. clay pipe culverts.—Johnston & Morgan, proj. engrs., 609 Flatiron Bldg., Atlanta.

**Ga., Monroe.** **noon, Oct. 1.** 8.2 mi. top-soil road in Walton Co.—Bd. Comrs. of Roads and Revenues.

**III., Charleston.** **1 p.m., Sept. 20.** Road work—T. N. Cofer.

**Ind., Wabash.** **Sept. 22.** Improvements in various streets—S. W. Van Duzen, City Clk., City Bldg.

**Ind., Mt. Vernon.** **2 p.m., Oct. 7.** 6,190 ft. gravel road in Bethel Twp.—J. R. Haines, Co. Aud.

**Ind., Corydon.** **2 a.m., Oct. 7.** 13,373 ft. stone road in Posey Twp.—S. C. Mauck, Co. Aud.

**Ind., Frankfort.** **2 p.m., Oct. 7.** 2,641 ft. gravel road in Johnson Twp.—E. Spray, Co. Aud.

**Ind., Sullivan.** **noon, Oct. 7.** 2,800 ft. macadam road in Jefferson Twp.—F. M. Daniels, Co. Aud.

**Ind., Lebanon.** **10 a.m., Oct. 7.** 12 gravel roads, one between Boone and Hendricks Cos., 4 in Marion Twp., 2 in Eagle Twp. and 1 in Center and Jackson, Clinton, Center, Perry and Worth Twp., respectively—C. Goodwin, Co. Aud.

**Ind., Greenfield.** **Oct. 6.** Several roads in Hancock Co.—C. Boone, Co. Engr.

**Ind., Vernon.** **2 p.m., Oct. 6.** 2,762 ft. crushed stone road in Marion twp. and 14,020 ft. crushed stone road in Geneva twp.—E. Bemish, Co. Aud.

**Ind., Rushville.** **2 p.m., Oct. 6.** 15,621 ft. gravel road in Ripley twp.—Wm. H. McMillen, Co. Aud.

**Ind., Brownstown.** **2 p.m., Oct. 6.** 5,400 ft. gravel road in Carr Twp. and 14,340 ft. stone and gravel road in Washington Twp.—A. Luedtke, Co. Aud.

**Ind., Vevay.** **1 p.m., Oct. 6.** 16,900 ft. stone road in Cotton Twp.—W. E. Reeves, Co. Aud.

**Ind., Bonville.** **10 a.m., Oct. 6.** Road in Hart Twp.—Wm. A. Campbell, Co. Aud.

**Ind., Bedford.** **1 p.m., Oct. 7.** 13,777 ft. gravel or macadamized road in Shawswick Twp.—Wm. M. Dennison, Co. Aud.

**Ind., Washington.** **2 p.m., Oct. 7.** 3 mi. road in Barr Twp.—J. G. Clark, Co. Aud.

**Ind., Rensselaer.** **2 p.m., Oct. 6.** Four stone roads in Marion, Gilliam, Barkley and Carpenter Twp.—J. P. Hammond, Co. Aud.

**Ind., English.** **2 p.m., Oct. 6.** Four crushed limestone roads in Patoka, Sterling, Whiskey Run and Liberty Twp.—O. D. Tadlock, Co. Aud.

**Ind., Williamsport.** **1 p.m., Oct. 6.** 5,349.5 ft. gravel road in Pine Twp.—W. H. Stephens, Co. Aud.

**Ind., Bloomfield.** **2 p.m., Oct. 7.** Macadam road in Taylor Twp.—H. Corbin, Co. Aud.

**Ind., Madison.** **1 p.m., Oct. 7.** 19,000 ft. gravel road in Saluda Twp. and 7,842 ft. road on line between Hanover and Republican Twp.—C. S. Dibler, Co. Aud.

**Ind., Delphi.** **1.30 p.m., Oct. 7.** Macadam road in Jefferson Twp. and macadam road in Clay Twp.—H. D. Good, Co. Aud.

**Ind., Knox.** **noon, Oct. 7.** Three roads in Jackson Twp. and three roads in Davis Twp., Wayne Twp. and Railroad Twp., respectively.—C. W. Wenzinger, Co. Aud.

**Ind., Winamac.** **noon, Oct. 7.** 10,620 ft. crushed stone road in White Post Twp.—J. C. Howe, Co. Aud.

**Ind., Rochester.** **2 p.m., Oct. 7.** Gravel road in Aubbeenaubbee Twp.—E. A. Smith, Co. Aud.

**Ind., Dubuque.** **7.30 p.m., Sept. 24.** Improving street with brick blk., sheet asphalt or bitulithic paving, involving 1,031 sq. yd. brick blk., or 958 sq. yd. sheet asphalt or bitulithic, 100 lin. ft. new cement curb, 720 sq. ft. cement gutter, etc.—J. Stuber, City Recorder.

**Kan., Iola.** **1 p.m., Sept. 29.** Federal-aid road in Cottage Grove Twp., Allen Co., including 16-ft. macadam base, gravel top and two-course concrete road with 5-ft. earth shoulders, for distance of 17,110.4 ft., of which 900 lin. ft. will be concrete road.—G. Seymour, Co. Clk.

**La., New Orleans.** **Sept. 23.** Curbing, sidewalks and paving several streets with wood block, asphalt, bitulithic or bituminous concrete on 6-in. concrete base.—T. L. Willis, City Engr.

**Md., Salisbury.** **Sept. 23.** 1.03 mi. 15-ft. road, involving 9,064 sq. yd. 6-in. concrete; 1.07 mi. 15-ft. road, involving 9,418 sq. yd. 6-in. concrete, both in Wicomico Co.—H. M. Clark, Co. Engr.

**Mass., Boston.** **noon, Sept. 23.** 5,300 ft. asphalt pavement in Wareham.—F. I. Bieler, Secy., State Hwy. Comm., State House.

**Mich., Mt. Clemens.** **5 p.m., Sept. 25.** Paving city streets.—J. H. Matthews, City Clk.

**Mich., Lansing.** **1.30 p.m., Sept. 24.** 2,933 mi. 16-ft. Class B gravel road in Cambria and Hillside Twp., Hillsdale Co.; 4,007 mi. 12-ft. Class B gravel road in Kalamazoo and Calhoun Cos.; 3,967 mi.

16-ft. Class B gravel or Class C stone or slag bottom and gravel top road in Iona Co.—F. F. Rogers, State Hwy. Comr.

**Mich., Lansing.** **1.30 p.m., Sept. 26.** 0.497 mi. road in Huron Co., consisting of shaping road, draining and surfacing with gravel; 1,006 mi. road in Alpena Co., consisting of shaping road, draining and graveling—F. F. Rogers, State Hwy. Comr.

**Mich., Lansing.** **1.30 p.m., Sept. 25.** 0.511 mi. road in city of South Haven, Van Buren Co., consisting of shaping road and surfacing with concr., 20 ft. wide—F. F. Rogers, State Hwy. Comr.

**Minn., Faribault.** **2 p.m., Oct. 1.** 12.6 mi. state road, involving 71,223 cu. yd. excav., 1,905 lin. ft. P. L. Culverts (15 to 30-in.), 15,077 cu. yd. gravel surfacing, etc.; 7.1 mi. State road, involving 46,982 cu. yd. excav., 1,245 lin. ft. 15 and 18-in. P. L. culverts, 8,569 cu. yd. gravel surfacing, etc.—F. M. Kaisersatt, Co. Aud.

**Minn., Columbia Heights.** **8 p.m., Sept. 23.** Grading streets, involving 1,400 cu. yd.—J. W. Shaffer & Co., Engrs., 51 New York Life Bldg., Minneapolis.

**Minn., Altkin.** **Sept. 27.** Grading and graveling 5.6 mi. 24-ft. road in Dick Twp.—F. J. O'Hara, Engr.

**Mo., Lancaster.** **Oct. 13.** Paving and curbing street, involving 14,000 sq. yd. vitr. brick, 7,500 lin. ft. concr. curbing and 3,500 cu. yd. earth excav.—Grist & Wiegner, engr., Lancaster.

**Mo., Independence.** **10 a.m., Sept. 30.** 3.1 mi. State Road Project No. 18, including grading, surfacing with bituminous macadam 16 ft. wide, earth shoulders, ditches and culverts, etc., in Jackson Co.—O. C. Sheley, Co. Hwy. Engr., Court House.

**Mo., St. Louis.** **noon, Oct. 7.** Granite sidewalk pavements from four to six ft. wide on seven city streets.—E. R. Kinsey, Pres., Bd. Pub. Serv.

**Mo., St. Louis.** **Sept. 23.** 1,500 ft. paving in various streets and alleys with vitrified brick, asphalt, concrete or bituminous concrete.—C. E. Smith, City Engr.

**Neb., Beaver City.** **10.30 a.m., Sept. 23.** Grading, paving, culverts, etc., on 4.57 mi. road in Furnas Co., involving 36,722 cu. yd. earth excavation, 500.6 sq. yd. overflow pavement, 270 lin. ft. 18 a 24-in. concrete or corrugated pipe, concrete for box culverts and headwalls, etc.—G. E. Johnson, State Hwy. Engr., Lincoln.

**Neb., Elwood.** **10.30 a.m., Sept. 24.** Grading, culverts, guard rails, etc., on 7.06 mi. in Gosper Co., involving 62,594 cu. yd. earth excavation, 8,564 lin. ft. guard rail, 908 lin. ft. 18 to 30-in. concrete or corrugated pipe, 36 lin. ft. 24 and 60-in. corrugated pipe, etc.—G. E. Johnson, State Hwy. Engr., Lincoln.

**Neb., Lexington.** **5 p.m., Sept. 24.** Grading, culverts, guard rails, etc., on 27.47 mi. in Dawson Co., involving 168,219 cu. yd. earth excavation, 2,269 lin. ft. 18 to 36-in. concrete or corrugated pipe, concrete for box culverts and headwalls, 1,645 lin. ft. guard rail, etc.—G. E. Johnson, State Hwy. Engr., Lincoln.

**Neb., Kimball.** **Sept. 25.** Grading, paving and culverts on 26.7 mi. 24-ft. road in Kimball Co., involving 510 sq. yd. concrete, 143,645 cu. yd. earth excavation, 1,654 ft. 18 to 36-in. concrete pipe, 270 cu. yd. concrete, etc.—G. E. Johnson, State Hwy. Engr., Lincoln.

## BIDS ASKED FOR

<b>Neb., Loup City.</b>	<b>Sept. 26.</b>	Improving various city streets by grading, paving and culverts on 12 mi. 24-ft. road in Sherman Co., involving 3,040 sq. yd. concrete, 85,024 cu. yd. excavation, 304 lin. ft. 12 and 24-in. concrete pipe, 130 cu. yd. concrete, etc.—G. E. Johnson, State Hwy. Engr., Lincoln.	<b>Sept. 23.</b>	Improving various city streets by grading, paving with asphalt, bituminous macadam, vitrified block, repaving with granite block and wood block, repairing river banks and constructing cement concrete retaining wall.—G. E. Datesman, Dir., Dept. Pub. Wks., City Hall.
<b>Neb., Peru.</b>		Grading and paving 4,700 ft. 24-ft. street.—G. E. Johnson, State Hwy. Engr., Lincoln.	<b>Sept. 23.</b>	
<b>Neb., Spencer.</b>	<b>2 p.m., Sept. 25.</b>	13,680 sq. yd. paving, 3,425 lin. ft. curb and 3,000 cu. yd. excav., storm sewer—Henningsen Engr. Co., National Bldg., Omaha.	<b>Sept. 23.</b>	
<b>Nev., Carson City.</b>	<b>noon, Sept. 23.</b>	7.57 mi. state highway from Leeterville to Fallon, Churchill Co., involving 26,000 cu. yd. excavation, 66,610 sq. yd. gravel surface, 5 in. thick, 730 lin. ft. 15 to 30-in. metal pipe, 2,384 lin. ft. guard rail, 67 monuments, seven sign posts.—C. C. Cottrell, State Hwy. Engr.	<b>Sept. 23.</b>	
<b>N. J., Ocean City.</b>	<b>Sept. 20.</b>	Grading entire city, involving 8,500 ft. gravel and sand filling—W. H. Collison, Jr., Engr., City Hall.	<b>Sept. 23.</b>	
<b>N. J., Elizabeth.</b>	<b>2:30 p.m., Oct. 1.</b>	Improving street in Rahway with concrete surface, involving 11,902 sq. yd. surfacing and foundation.—J. L. Bauer, Co. Engr., 120 Broad St.	<b>Sept. 23.</b>	
<b>N. J., North Bergen.</b>	<b>Sept. 25.</b>	Improving street with bituminous pavement.—P. Daly, Engr., 31st St.	<b>Sept. 23.</b>	
<b>N. J., New Brunswick.</b>	<b>10 a.m., Sept. 23.</b>	Repaving avenue and improving streets.—E. J. McClaughlin, City Clk.	<b>Sept. 23.</b>	
<b>N. Y., Albany.</b>	<b>1 p.m., Sept. 23.</b>	Improving following highways: 2.48 mi. in Orange Co., 3.13 mi. in Suffolk Co., 6.53 mi. in Washington Co.; also completing 10.18 mi. in Chenango Co., 6.86 mi. in Dutchess Co., 5.19 mi. in Erie Co., 3.95 mi. in Greene Co., 4.05 mi. in Jefferson Co., 6.36 mi. in Oswego Co., 6.13 mi. in Otsego Co., 7.20 mi. in Rensselaer Co., 6.10 mi. in Saratoga Co., 4.99 mi. in Steuben Co., 9.64 mi. in Sullivan Co., 5.13 mi. in Warren Co., and 10.35 mi. in Westchester Co.—F. S. Greene, State Hwy. Comr.	<b>Sept. 23.</b>	
<b>N. Y., Marcy.</b>	<b>3 p.m., Sept. 24.</b>	Excavating and grading to form sub-grade for spur track, culvert and incidental work at Marcy division of Utica State Hospital—State Hospital Comn., Capitol, Albany.	<b>Sept. 23.</b>	
<b>N. Y., Buffalo.</b>	<b>11 a.m., Sept. 23.</b>	Grading, constructing drains, etc., at 65th Armory.—Co. Engr., 575 Ellicott Sq.	<b>Sept. 23.</b>	
<b>N. Y., New York.</b>	<b>noon, Sept. 25.</b>	Repaving with bituminous concrete pavement and vitrified brick gutters on concrete foundation in Boro. of Richmond.—C. D. Van Name, Pres., Boro. of Richmond.	<b>Sept. 23.</b>	
<b>N. Y., New York.</b>	<b>2 p.m., Sept. 22.</b>	Repairing asphalt pavement in railroad area in Boro. of Manhattan, involving 6,000 sq. yd. sheet asphalt and 100 cu. yd. concrete.—F. L. Dowling, Pres., Boro. of Manhattan.	<b>Sept. 23.</b>	
<b>N. Y., New York.</b>	<b>11 a.m., Sept. 24.</b>	Repairing with permanent asphalt on 6-in. concrete foundation; repaving with permanent Grade 1 granite pavement on concrete foundation.—E. Riegelmann, Pres., Boro. of Brooklyn.	<b>Sept. 23.</b>	
<b>N. C., Concord.</b>	<b>8 p.m., Sept. 25.</b>	Grading and paving sidewalks on various streets, consisting of 19,000 sq. yd. concrete walk.—City Engr.	<b>Sept. 23.</b>	
<b>N. C., Goldsboro.</b>	<b>noon, Oct. 9.</b>	Grading and paving streets with vitr. brick, wood blk., concr. sheet asphalt, asphaltic concr., or bitulithic, involving 100,000 sq. yd. pavement, 55,000 lin. ft. combined concr., curb and gutter, 5,000 sq. yd. sidewalk paving, storm drains, etc.—J. L. Ludlow, engr., Winston-Salem.	<b>Sept. 23.</b>	
<b>O., Medina.</b>	<b>Sept. 23.</b>	Grading and paving with concrete two mi. road, with 10-ft. pavement.—C. D. Lowe, Clk., Bd. Co. Comrs.	<b>Sept. 23.</b>	
<b>O., Kenton.</b>	<b>Oct. 3.</b>	Paving streets with asphaltum or asphaltic concrete.—R. E. Ratcliffe, Clk., Bd. Pub. Serv.	<b>Sept. 23.</b>	
<b>O., Cincinnati.</b>	<b>noon, Oct. 3.</b>	Widening road with macadam paving in Crosby Twp.; improving road in Whitewater Twp.—A. Reinhardt, Clk., Bd. Co. Comrs.	<b>Sept. 23.</b>	
<b>Neb., Broken Bow.</b>		Sewage disposal plant, also sanitary sewers and laterals, involving 46,719 ft. 8 to 15-in. vitrified pipe and 240 ft. 8 to 16-in. cast iron pipe, and two 150 gal. per minute septic tanks.—Grant, Fulton & Letton, Engr., 505 Bankers' Life Bldg., Lincoln.	<b>Sept. 23.</b>	
<b>N. C., Wilmington.</b>	<b>noon, Sept. 27.</b>	One vertical shaft centrifugal or volute pump and suitable electric motor direct connected to same, capacity of pump 2,000 gal. per minute—McKean Maffitt, Supt. Water & Sewers.	<b>Sept. 23.</b>	
<b>Conn., East Hartford.</b>	<b>8 p.m., Oct. 2.</b>	Extensions to municipal water works, including 2 covered concr. reservoirs, low dam, 16-in. cast iron pipe line 6.6 mi. long with appurtenances.—J. H. Fuertes, engr., 140 Nassau st., N. Y. C.	<b>Sept. 23.</b>	
<b>Ill., Maywood.</b>	<b>8 p.m., Sept. 25.</b>	Furnishing one centrifugal pump, 6-in. discharge, 8-in. suction, and one gasoline engine to operate pump.—Supt. Water Dept., Vil. Hall.	<b>Sept. 23.</b>	
<b>Mass., Boston.</b>	<b>noon, Sept. 19.</b>	Relaying water pipes in various city streets—T. F. Sullivan, Comr. Pub. Wks., 508 City Hall Annex.	<b>Sept. 23.</b>	
<b>Mich., Detroit.</b>	<b>1 p.m., Sept. 30.</b>	Foundation and sub-structure for low lift pumping station.—B. F. Guiney, Pres., Bd. Water Comrs., 232 Jefferson ave.	<b>Sept. 23.</b>	
<b>Neb., Chadron.</b>		Laying new supply mains and replacing old mains, also 750,000 gal. concrete lined reservoir, involving 27,000 ft. 14-in. pipe, wood, cast iron, steel or reinforced concrete.—G. T. Prince, Engr., 532 Bee Bldg., Omaha.	<b>Sept. 22.</b>	
<b>Neb., Bridgeport.</b>	<b>2 p.m., Sept. 20.</b>	Extending water works system to include 1 well, 2 water tight concr. pits, 5,344 ft. 6-in. pipe, cast iron and special fittings, 2,093 lbs.; 10 hydrants, 9 4-in. gate valves, double; digging 5,344 ft. trench; addition to pump house; one Gould triplex pump to new well, and electric and water connections—R. E. Barrett, City Clk.	<b>Sept. 22.</b>	
<b>Neb., Chadron.</b>		Extension work, involving 27,000 ft. 14-in. pipe—G. T. Prince, Engr., Bee Bldg., Omaha.	<b>Sept. 22.</b>	
<b>N. Y., Marcy.</b>	<b>3 p.m., Sept. 24.</b>	Concrete dam, gate house, reservoir and appurtenances for Marcy division of Utica State Hospital—State Engr. and Surveyor, Telephone Bldg., Albany.	<b>Sept. 22.</b>	
<b>O., Akron.</b>	<b>noon, Sept. 26.</b>	Pumping station for Water Works Bureau, including excavation, concrete foundation and brick superstructure, pedestal foundation for steel water tank, etc.—H. S. Morse, Serv. Dir.	<b>Sept. 22.</b>	
<b>O., Shadyside.</b>		700 ft. 6-in. class C. cast iron pipe.—F. McConn, Clk.	<b>Sept. 22.</b>	
<b>O., Columbus.</b>	<b>noon, Sept. 20.</b>	Furnishing 440 tons 36-in. straight pipe and five tons 36-in. specials; 130 tons 24-in. straight pipe and five tons 24-in. specials; 60 tons 8-in. and 10 tons 6-in. pipe, Class B, in 16-in. lengths or 12-in. lengths.—G. A. Borden, Pres., Bd. Purch.	<b>Sept. 22.</b>	
<b>Wis., Rhinelander.</b>	<b>2 p.m., Sept. 24.</b>	Installing chlorine plant—N. H. Smith, City Engr.	<b>Sept. 22.</b>	
<b>Wis., Dodgeville.</b>	<b>7 p.m., Oct. 2.</b>	3,500 ft. water mains.—J. P. Lewis, Vil. Clk.	<b>Sept. 22.</b>	
<b>LIGHTING AND POWER.</b>			<b>Sept. 22.</b>	
<b>Cal., Mare Island.</b>	<b>Oct. 1.</b>	Installing electric lighting and power systems.—Bureau of Yds. & Docks, Navy Dept., Washington, D. C.	<b>Sept. 22.</b>	
<b>O., Columbus.</b>	<b>noon, Sept. 29.</b>	Furnishing 43 self-cooled outdoor type transformers and two 1,667-k. v. a. water-cooled, indoor type transformers; furnishing 175 top Western cedar poles and 5,000 lbs. No. 6 and 10 triple braid weather-proof copper wire.—G. A. Borden, Pres., Bd. Purch.	<b>Sept. 22.</b>	
<b>O., Columbus.</b>		Furnishing 43 self cooled outdoor type transformers.—G. A. Borden, Pres., Bd. Purch.	<b>Sept. 22.</b>	
<b>O., Youngstown.</b>	<b>Oct. 13.</b>	Additions and alterations to electrical equipment of power plant in Mahoning Co. Court House.—Crippen & Funk, Engrs., Ohio Hotel.	<b>Sept. 22.</b>	
<b>Hawaii, Pearl Harbor.</b>	<b>Oct. 22.</b>	Improving power plant here.—Bureau Yds. & Docks, Navy Dept., Washington, D. C.	<b>Sept. 22.</b>	
<b>Sask., Hanley.</b>	<b>6 p.m., Sept. 24.</b>	Supplying and erecting one internal combustion engine, one generator, exciter, switchboard, transformers, meters, etc., one oil storage tank, poles, wire and line material, electric pole line, and power station and cooling chamber.—Murphy & Underwood, Engrs., Saskatoon.	<b>Sept. 22.</b>	

## SEWERAGE.

<b>In., Dubuque.</b>	<b>7:30 p.m., Sept. 24.</b>	8-in. tile pipe sanitary sewer, involving 3,295 lin. ft. pine, 14 manholes and 2 drop manholes; also 500 lin. ft. and 3 manholes—J. Stuber, City Recorder.
<b>Mass., Boston.</b>	<b>noon, Sept. 26.</b>	Sewerage works in street in Dorchester—T. F. Sullivan, Comr. Pub. Wks., 508 City Hall Annex.
<b>Minn., Adrian.</b>	<b>8 p.m., Sept. 30.</b>	General sanitary sewer system, involving 17,616 ft. 8-in., 4,139 ft. 10-in., 1,128 ft. 12-in., and 350 ft. 15-in. vitr. sewer tile, disposal tank, including septic tank and sludge bed and by-pass and accessories—Drar & Smith, Engrs., St. Paul.
<b>Neb., Broken Bow.</b>	<b>Sept. 23.</b>	Sewage disposal plant, also sanitary sewers and laterals, involving 46,719 ft. 8 to 15-in. vitrified pipe and 240 ft. 8 to 16-in. cast iron pipe, and two 150 gal. per minute septic tanks.—Grant, Fulton & Letton, Engr., 505 Bankers' Life Bldg., Lincoln.
<b>N. C., Concord.</b>	<b>8 p.m., Sept. 25.</b>	Grading and paving sidewalks on various streets, consisting of 19,000 sq. yd. concrete walk.—City Engr.
<b>N. C., Goldsboro.</b>	<b>noon, Oct. 9.</b>	Grading and paving streets with vitr. brick, wood blk., concr. sheet asphalt, asphaltic concr., or bitulithic, involving 100,000 sq. yd. pavement, 55,000 lin. ft. combined concr., curb and gutter, 5,000 sq. yd. sidewalk paving, storm drains, etc.—J. L. Ludlow, engr., Winston-Salem.
<b>O., Medina.</b>	<b>Sept. 23.</b>	Grading and paving with concrete two mi. road, with 10-ft. pavement.—C. D. Lowe, Clk., Bd. Co. Comrs.
<b>O., Kenton.</b>	<b>Oct. 3.</b>	Paving streets with asphaltum or asphaltic concrete.—R. E. Ratcliffe, Clk., Bd. Pub. Serv.
<b>O., Cincinnati.</b>	<b>noon, Oct. 3.</b>	Widening road with macadam paving in Crosby Twp.; improving road in Whitewater Twp.—A. Reinhardt, Clk., Bd. Co. Comrs.

## BIDS ASKED FOR

**Sask., Saskatoon.** **Sept. 23.** Steam turbine, alternating current, generator, switch gear equipment, surface condenser and condenser auxiliaries.—C. J. Yorath, City Comr.

## FIRE EQUIPMENT.

**D. C., Washington.** **2 p.m., Sept. 29.** Furnishing 3 combination chemical and hose wagons, 3 fire engines and 1 aerial hook and ladder truck, all to be motor driven, for use in fire dept.—Purchasing Officer, D. C., 320 Dist. Bldg.

**N. J., Rumson.** **8 p.m., Oct. 2.** Installing rotary pump complete on 2 Boyd fire trucks and new radiator on each truck.—D. A. Naughton, Boro. Clk.

**N. Y., New York.** **10:30 a.m., Sept. 23.** Furnishing six motor-driven hose wagons.—T. J. Drenna, Fire Comr.

## BRIDGES.

**Ala., Birmingham.** **noon, Sept. 20.** Reinforced concrete 100-ft. arch span or girder bridge in Jefferson Co.—W. S. Keller, State Hwy. Engr., Montgomery.

**Ark.-Tex., Texarkana.** **10 a.m., Sept. 25.** Steel bridge over Sulphur River at Blackmon Point.—Co. Clk.

**Fla., Pensacola.** **9:30 a.m., Sept. 27.** Steel bridge with concrete abutments and piers, across Eleven Mile Creek, 180 ft. long with 16-ft. roadway, involving 40,000 lbs. structural steel, 5,000 lbs. reinforcing steel, 160 bbls. cement, etc.—J. Macgibbon, Circuit Clk. for Escambia Co.

**Ga., Thomson.** **Sept. 29.** Two reinforced concrete bridges, one over Sweetwater Creek and one over Peggyhan Branch, including improving creek channel at bridge.—G. W. Lokey, Ordinary, McDuffle Co.

**Ind., Noblesville.** **11 a.m., Sept. 27.** Bridge over White River in Hamilton Co.—H. O. Cottingham, Co. Aud.

**Kan., Iola.** **1 p.m., Sept. 29.** Bridge work in Allen Co.—G. Seymour, Co. Clk.

**Mich., Lansing.** **1:30 p.m., Sept. 24.** 55-ft. through plate girder to be encased in rein. concr., with 20-ft. roadway for trunk line bridge No. 261, crossing Pigeon River in Ottawa Co.—F. F. Rogers, State Hwy. Comr.

**Mich., Lansing.** **1:30 p.m., Oct. 1.** Two 15-ft. plain concr. abutments containing 247 cu. yd. concr. for trunk line bridge No. 290, across Macon River in Monroe Co.; also one 55-ft. through plate girder encased in rein. concr., with 20-ft. roadway for above bridge.—F. F. Rogers, State Hwy. Comr.

**Mich., Lansing.** **1:30 p.m., Sept. 24.** Trunk line bridge consisting of 40-ft. reinforced concrete arch with 20-ft. roadway in Alger Co.; trunk line bridge, 35-ft. reinforced concrete girder with 18-ft. roadway in Delta Co.—F. F. Rogers, State Hwy. Comr.

**Minn., Walker.** **11 a.m., Sept. 23.** Two state bridges in Cass Co.—A. W. Moulster, Engr., Pine River.

**Minn., Duluth.** **Sept. 22.** Thirty reinforced concrete and steel bridges.—R. W. Acton, Co. Engr.

**N. J., Flemington.** **11 a.m., Sept. 25.** Two 55-ft. span reinforced concrete arch bridge in Boro. of High Bridge, involving 782 cu. yd. concrete.—G. Davis, Co. Engr.

**N. J., Trenton.** **10:30 a.m., Sept. 20.** Four reinforced concrete bridges in Camden Co.—A. L. Grover, Chief Clk., State Hwy. Comn.

**N. C., Lexington.** **Sept. 24.** Material for five bridges.—N. S. Mullican, Engr.

**N. C., Santa Fe.** **Oct. 6.** Concrete bridge across Arroyo Mascaros—Bd. Co. Comrs.

**Ohio, Cincinnati.** **noon, Sept. 26.** Concrete wing to bridge over Mill Creek, Locland, in Springfield Twp.—A. E. Mittendorf, Clk., Bd. Co. Comrs.

**Pa., Harrisburg.** **11 a.m., Sept. 24.** Rebuilding bridge over Little Wisconsin Creek of reinforced concrete, earth-filled arch, in Dauphin Co.—H. W. Gough, Co. Contr.

**Pa., Harrisburg.** **10 a.m., Sept. 23.** Soldiers and Sailors' Memorial bridge.—A. W. Brunner, Archt., 101 Park Ave., N. Y. City.

**S. D., Sturgis.** **2 p.m., Oct. 7.** Heavy bridge over Belle Fourche River, 270-ft. span, 16-ft. roadway.—State Hwy. Comr., Pierre.

**Wis., Kenosha.** **8 p.m., Sept. 26.** Bridge over Kenosha harbor—Westcott Engr. Co., 111 Washington St., Chicago, Ill.

**Dominican Republic, Santo Domingo.** **10 a.m., Sept. 30.**

Rein. concr. bridge and approaches over the Rio Yaque del Sur in the Province of Azua, consisting of 2 rein. concr. arches 91 ft. span each, and 4 slab spans 22 ft. each, 304 ft. long and 18 ft. 9 in. wide.—Dir. Gen. Pub. Wks.

## MISCELLANEOUS.

**Ark., Marianna.** **2 p.m., Sept. 23.** Thirty mi. floating dredge work, containing 1,905,000 cu. yd. earth; also 8 1/3 mi. floating dredge work containing 214,000 cu. yd. earth.—Daggett & Daggett.

**Colo., Denver.** **Oct. 1.** Furnishing balanced needle valves, high-pressure emergency gates and sluice gate for north tunnel of Pathfinder Dam, North Platte Project, Nebraska-Wyoming.—A. P. Davis, Chief Engr., U. S. Reclamation Service.

be spent this fall and next spring, according to plans. One of the main roads to be put in better shape is road leading to Caldwell from Riverside county. This will be graded and sanded soon. Principal byroads to this stretch will be improved at same time. In eastern part of Co. roads will be improved by Nampa Hwy. Dist., which has \$500,000 to spend through issue recently floated. Roads leading up to district boundaries will be cared for and improved by Co. as part of the program.

**Ida., Moscow.** Bovill Hwy. Dist., of Latah Co., sold \$75,000 of 5 1/2 per cent construction bonds, maturing in 10 to 20 years, to Murphy, Favre & Co., of Spokane.

**Idaho, Wallace.** Clark Highway District, Shoshone Co., voted \$175,000 bonds to improve roads. O. Avery, Pres. Engineer not selected.

**Ida., Weiser.** Washington Co. passed the \$300,000 bond for good roads. Passage of the vote assures total of \$600,000 with Federal aid that will be expended on good roads. The north and south highway through the Co. will be completed and additional roads will be built and improved.

## STREETS AND ROADS.

**Cal., Fresno.** Bd. Supervs. Fresno Co. applied to U. S. Bureau of Good Roads for funds to grade, gravel, oil and drain roads as follows: \$30,000 for Trimmer Springs Rd., \$80,000 for Tool House Rd., \$60,000 for Sand Creek Rd., \$30,000 for Millwood and Sand Creek cutoff, and \$100,000 for Auberry-Huntington Lake Rd. D. M. Barnwell, Clerk.

**Conn., Hamden.** Question of issuing 5 per cent. road bonds to amount \$100,000 carried by unanimous vote Aug. 19.

**Fla., Fort Pierce.** Election planned in St. Lucie Co. on \$700,000 road bonds. Address Co. Clerk.

**Ida., Boise.** Bids will be called for Oct. 10 by Co. Comrs. on a 10-20-yr. optional 5 per cent. maximum bond to float the \$1,000,000 road building program of Ada Co.

**Ida., Caldwell.** Although no bond issues are being considered by Comrs. for Canyon Co., approximately \$125,000 is to

**D. C., Washington.** **10:30 a.m., Sept. 25.** Furnishing cable, pipe and fittings, valves, lock nuts, cocks, storage batteries, tires and tubes, etc.—A. L. Flint, Purch. Officer, Panama Canal.

**D. C., Washington.** **10 a.m., Sept. 23.** Quantity of steel, consisting of I-beams, Bessemer sheets, steel bars and drift bolts.—Director of Sales, Surplus Property Div.

**D. C., Washington.** **2 p.m., Sept. 22.** Purchase of tankage from garbage collected by Comrs., D. C.—Chief Clerk, Engr. Dept., 427 District Bldg.

**Mich., Detroit.** **11 a.m., Oct. 8.** Dredging in St. Clair river at Port Huron.—U. S. Engr. office.

**Minn., Waseca.** **2 p.m., Sept. 29.** Section of Co. ditch in Waseca Co., involving 50.215 ft. 6-in. to 40-in. tile, 26 surface water inlets, one concrete bulkhead.—Guy Cox, Engr. in Charge.

**Mo., St. Louis.** **11 a.m., Oct. 6.** 150,000 cu. yd. earthwork by hydraulic method in Muscatine-Louisa Island levee dist., Ia.; also 145,000 cu. yd. earthwork by hydraulic method in Drury drainage dist., Ill.—Secy., Mississippi River Commission, 1311 International Life Bldg.

**N. J., Ocean City.** **Sept. 20.** Bulkheads—W. H. Collinson, Jr., Engr., City Hall.

**N. Y., New York.** **10:30 a.m., Sept. 24.** Furnishing chloride of lime and liquid chlorine to Dept. of Water Supply, Gas and Electricity, and boiler tubes, to Dept. of Plant and Structures.—Bd. Purchase, Municipal Bldg.

**N. Y., New York.** **noon, Sept. 25.** Removing snow and ice during winter season, 1919-1920, in Boroughs of Manhattan, Bronx and Brooklyn.—A. B. McStay, Comr. St. Cleaning.

**N. Y., New York.** **noon, Oct. 16.** Dipper dredge.—U. S. Engr. Office, 710 Army Bldg., 39 Whitehall St.

**Ohio, Ashtabula Harbor.** **11 a.m., Sept. 30.** Rubble mound extension of west breakwater.—U. S. Engr. Office, Cleveland.

**Ohio, Columbus.** **noon, Sept. 29.** Furnishing four gasoline curb pumps equipped with 10 ft. triplex hose, discharge nozzle, filter and meter; three 120-gal. capacity, cylindrical No. 12 gauge galvanized riveted and soldered steel tanks, with necessary flanges, openings, fill pipes, strainers and round street boxes; one 280-gal. tank same as 120-gal.; one special gasoline supply tank, No. 12 gauge, galvanized steel, equipped with rotary hand pump, fill cap and vent, gauge flange, discharge nozzle and 15 ft. triplex gasoline hose; furnishing gasoline for municipal reduction plant.—G. A. Gorden, Pres., Bd. Purch.

**Pa., Natrona.** **noon, Oct. 3.** Lock and dam in Allegheny River near here.—U. S. Engr. Office, Pittsburgh.

**N. S., Little River.** **noon, Sept. 25.** Repairs to breakwater at Little Brook, Digby Co.—Dist. Engr., Halifax.

**Ill., East St. Louis.** Street Comm. soon receives bids surfacing St. Louis Ave. from 10 to 20th Sts., 30 ft. wide, cost \$75,340; also paving St. Louis Ave. from 10th St. to Collinsville Ave., 30 ft. wide, both asphalt, \$54,000.

**Ind., Brownstown.** Jackson County will sell Sept. 24 \$37,000 highway improvement bonds. H. H. Alberring, Treas.

**Ind., Princeton.** Gibson County asks bids Sept. 23 on sale of bonds of \$32,000 for highway improvement. S. Witherpoon, Treas.

**Ind., South Bend.** Plans are drawn for Edwardsburg Hwy. road at estimate of \$195,000. Will advertise for bids soon. Engr., Henderson McClellan, Court House.

**Ind., Clinton.** Clinton County authorized Board of Supervisors to pave primary roads and to issue \$1,800,000 road bonds to pay for immediate prosecution and completion of work.

**La., Springville.** Road about 30 mi. long planned in Livingston Parish; estimate, \$300,000. Address Police Jury.

**Mass., Boston.** Board of Street Comrs. propose the laying out and construction of Estey St., Roxbury Dist., as highway. J. F. Sullivan, Secy.

**Minn., Biwabik**—At special election to ascertain whether voters wish to have town bonded for \$100,000 to be used in concreting avenues of Biwabik, council will at once take steps to look into the hard surfacing of roads and probability of placing a coating of bitulithic on main street paving.

**Minn., Duluth**—City Council considers ordinances appropriating \$433,961 for improving various streets.

**Minn., Duluth**—City Comm. decided to ask St. Louis County Board to rescind its decision to pave the Two Harbors road and instead to pave a new road along north shore between the Duluth & Iron Range Railroad Co.'s tracks and the lake front. Road in question is about 12 miles long.

**Minn., Duluth**—The following bids on city improvements were received by Div. of Pub. Wks.: For improvement of Fifty-fourth Ave. E. from London road to Glendale street, C. R. McLean, \$39,468.40, and John McDonnell, \$43,227.25.

**Minn., Duluth**—On Comr. Farrell's resolution, Council voted in favor of paving following streets: Grand Ave., from Fifty-nine Ave. W. to Eighty-fourth Ave. W.; estimated cost, \$157,580.50; Raleigh St., estimated cost, \$78,941.50; London Rd., from Eighth Ave. E. to Sixtieth Ave. E.; estimated cost, \$152,460.

**Mo., Kansas City**—County Court at Independence voted in favor of hard surfacing that portion of Washington Park Blvd. extending from Evanston station of Kansas City Railways Co. to city limits of Kansas City, and county will bear entire cost of paving. This was done in order to get state and federal aid in grading of the road, which now is contemplated.

**Mo., Memphis**—The Co. Court has ordered election to be held Sept. 13 to bond Co. for \$400,000, to be expended in road construction in Scotland Co.

**Mo., Mexico**—Audrian Co. Court has set Sept. 16 as date for vote on the million-dollar bond issue for 200 mi. of hard-surfaced roads in Audrian Co.

**Mo., St. Genevieve**—R. Abernathy, Engr., St. Genevieve, soon receives bids improving north and south sections of highway between St. Genevieve and St. Louis, also east and west sections between St. Genevieve and Farmington. About \$325,000.

**Mont., Butte**—Organization of good roads association in Silver Bow County for purpose of promoting proper expenditure of federal aid and proceeds of \$250,000 bond issue.

**N. J., Elizabeth**—Unanimous approval was given two road projects by Board of Freeholders and bids are to be sought by County Engineer Bauer for their construction. Roads are East Hazelwood Ave. in Rahway and Mountain Ave., central section, Mountainside. Estimated cost of road improvement will be \$100,000.

**N. J., Passaic**—City Clerk is directed to ask for bids for improvement of Highland avenue; also the improvement of Grace Ter. and State St. is being considered.

**N. C., Burgaw**—Pender Comrs. have under contemplation three main propositions. First matter was road leading from Wilmington to Fayetteville along historic old "Nigger Head" road of colonial days; second is from Wilmington to Goldsboro, and third, from Wilmington to New Bern. Bond issue, amounting to \$200,000, will be authorized at next meeting of Comrs.

**N. C., Charlotte**—All bids for construction of roads in Mecklenburg Co. were rejected by Executive Committee of State Hwy. Comm. at Greensboro, according to dispatch. It was stated that rejection was on ground that the bids were too high. New invitations for bids will be issued.

**N. C., Raleigh**—Caldwell County's \$260,000 road bond issue is validated.

**N. C., Winston-Salem**—Mr. J. L. Gilmer, Dir. of Div. of Rds. of Bd. of Trade, suggested that Co. issue bonds for purpose of building system of hard-surface roads, letting this to contract while convicts could be kept busy maintaining laterals feeding the main arteries. Mr. Gilmer stated that he thought a million-dollar bond issue would meet the situation, but it was estimated by others that Co. would need to provide for 100 mi. of hard-surface road as main arteries, which would cost approximately \$3,000,000.

**Okla., Bellair**—Bond issue of \$300,000 will be submitted to voters in November election, proceeds to be used in improvement of number of streets.

**Okla., Creston**—County Comms. have authorized \$95,000 bonds for Shreve-Woost-

er rd. Total cost, \$114,000. Also \$133,000 for 4 miles south from Creston.

**Okla., Fostoria**—Comrs. and city administration have decided to improve Columbus Ave. by placing brick on present macadam foundation. Property owners have requested an asphalt base for the brick.

**Okla., Fremont**—Bond issue of \$60,000 for paving Stillwell Ave. and portions of Hamlin Ave. and Liberty St., and for construction of sewers, has passed Council.

**Okla., Greenfield**—Legislation for improvement of Jefferson and 7th Sts. with either brick or tarvia bound macadam has passed Council.

**Okla., Hamilton**—Council has passed ordinance to appropriate \$50,000 to pay city's portion of Dixie Hwy., and to pave number of other city streets, including New London Pike, from D St. to city line.

**Okla., Martins Ferry**—Streets and alleys committee of Belaire council has plans for \$300,000 bond issue for paving program.

**Okla., Portsmouth**—Scioto Co. Comrs. have authorized sale of bonds for paving six mi. of Scioto Trail in Valley Twp., to cost \$262,000.

**Okla., Ravenna**—Co. Comrs. have authorized bond issue of \$115,000 for Charles-town-Paris intercounty highway, sold to the Second National Bank, Ravenna. Co. Comrs. also have available \$127,500 Portage Co. road bonds.

**Okla., Wellsville**—Comrs. will submit to popular vote in November question of a \$200,000 bond issue for road purposes.

**Okla., Youngstown**—Council has authorized paving of Sheridan Road, Farnaburs alley, grading Jones St., and grading Kennedy Ave.

**Ore., Bend**—Just as soon as proposition from State Highway Commission is formally presented to Deschutes County Court it will be quickly accepted was statement of County Judge Barnes. Commission's offer provides that county shall grade that part of The Dalles-California Highway, between Bend and Redmond, at cost of \$60,000, and that state will put on a macadam surface to cost \$175,000.

**Ore., La Grande**—Election planned in Union Co., on \$1,500,000 road bonds. Address Co. Judge.

**Ore., Molalla**—A good roads rally will be held here to inaugurate campaign for Molalla Valley Highway to connect with Pacific Highway. The meeting is expected to formulate some definite plan of action.

**Ore., Salem**—State Hwy. Comm. is preparing advertisements for bids on \$2,000,000 in state highway bonds under the \$10,000,000 road bonding enactment of the 1919 legislature. Bids will be opened at meeting of the Comm. in Portland, Sept. 20. Bonds will bear 4½ per cent interest and will mature in from 5 to 25 years.

**Tenn., Jackson**—Over 14,000 sq. yds. of concrete have been laid on Jackson streets, preparatory to putting on layer of asphalt. Practically every street in business section will be permanently improved, as well as all alleys. Bonds to the extent of \$225,000 have been issued.

**Tex., Amarillo**—Amarillo voters authorized issuance of paving bonds. This means that practically every street will be paved during the coming year. Only a few weeks ago Petter County declared in favor of \$750,000 road bond issue. During the coming year something near \$2,000,000 will be spent on roads and streets in this county.

**Tex., Austin**—Attorney General's Department has approved following bond issues: Ellis County Levee Improvement District No. 3, \$224,000, third series, payable serially, 5½ per cent interest; Sutton County serial road bonds, \$100,000 thirty-twenty, 5½ per cent; Henderson County Road District No. 13, \$75,000, serially, 5½ per cent; Henderson County Road District No. 12, \$60,000, serially, 5½ per cent; Bosque County, Common School District No. 40, \$7,500,000, tens, 5 per cent; City of Gainesville, refunding bonds \$30,500, 5½ per cent; Goshen Road District, special road bonds, Walker County, \$12,000, 5 per cent; Tarrant County Common School District No. 98, \$6,000, payable annually, 5 per cent.

**Tex., Bryan**—Material for repairing the sunken piers of Pitts Bridge across Brazos River is being assembled, and work will be done by Co. labor under direction of Co. Engr. Boyett. Petitions to Comrs.' Court asking for another good roads bond election are being prepared. It is thought election will be ordered about Oct. 1.

**Tex., Caldwell**—Comrs. met here and

ordered election for \$1,000,000 road bond issue to be held on Oct. 18.

**Tex., Lockhart**—At meeting of City Comm. an order was passed that will mean the rebuilding of most of principal streets. Emergency warrants to amount of \$20,000 will be issued.

**Tex., Dallas**—Advertisement for bids on grading of Denton road, known near city as Lemmon avenue road, were authorized by Comms. Court, officially opening county's \$6,500,000 road program. Work on this highway is expected to proceed without interruption until pavement extends from city limits to county line. Garland road will be next in order for improvement, having already been surveyed.

The Denton road is to be eighteen feet in width and of two inch asphaltic concrete on a macadam base. It must conform to specifications of State Highway Commission since it is designated as State highway No. 16-A. Depth of the macadam base will depend on character of the road surface on which it is to be laid, but was estimated by board of engineers at an average of six inches.

**Tex., Houston**—Action looking to the adoption of budget for expenditure of \$225,000 of road maintenance money during coming year was deferred by County Comrs. This action was taken to permit further consideration of certain items in the budget.

**Tex., Sulphur Springs**—Hopkins Co. Good Rds. Assn. opened campaign for \$2,000,000 road bond issue at Weaver. People voted unanimously for the issue, which is to be decided Saturday, Sept. 27.

**Tex., Pearall**—City Council has authorized City Treas. I. J. Hudson to take preliminary steps looking toward paving of streets of the city. It is purpose of Council to issue interest-bearing warrants to amount of approximately \$25,000 for the work. Civil engineers are at work getting up data as to cost of the improvements.

**Tex., Sour Lake**—Almost complete returns now available indicate that election held in Rd. Dist. No. 3 of Hardin Co. to determine whether or not bonds in the sum of \$310,000 for road building and maintenance should be issued, carried. Including these bonds to be issued, Hardin Co. will have an operative road bond of \$1,228,000, in addition to which State and Federal aid for link through Dist. 3 will be \$100,000. This sum is distributed and available as follows: No. 1, Saratoga-Batson, \$234,000; No. 2, Sour Lake, \$360,000; No. 3, Silsbee-Kountze, \$634,000.

**Va., Richmond**—Three Senate sessions resulted in passage of bill appropriating \$625,000 for state highway system, the bill giving \$400,000 to Co. roads and number of minor measures.

**Va., Richmond**—Work on Chamberlayne Ave., which was interrupted by war, will be resumed. Board of Aldermen having adopted resolution authorizing city to borrow \$100,000 for proposed improvements. About \$46,000 will be expended on Chamberlayne Ave. improvements. Grading and paving in South Richmond will take \$16,500 of the available funds. Equipment of Lee school will require expenditure of about \$16,000.

**Wash., Bremerton**—Bd. of Co. Comrs. have decided upon campaign to carry through special bonding election amounting to \$300,000. Greater part of fund to be asked will be for road building. Com. J. F. Cartier is already active in campaign.

**Wash., Charleston**—Practically \$80,000 worth of street improvement work is to be undertaken here in near future, according to City Clerk Wm. Callow, who has issued notice to contractors for concrete paving of Wycoff, Naval and Montgomery avenues, to cost \$34,107, \$23,136 and \$23,059, respectively. Improvements include sewer and sidewalk installations.

**Wash., Kelso**—Construction work will be started on Ocean Beach Highway in 1920. Thirty-five thousand dollars was appropriated by last Legislature for work in Cowlitz County, from Coal Creek west and contingent appropriation of \$75,000 was made for Wahkiakum County, which will also be available next summer. Engineer Signer is now making preliminary location of highway.

**Wash., Leavenworth**—At meeting of County Good Roads Committee it was decided to adopt road building program as follows: Concrete road between Wenatchee and Leavenworth, about 20 miles, at estimated cost \$597,000, of which \$300,000 will be paid out of bond issue, to which must be added \$70,000 for Cashmere bridge and \$10,000 for Peschantin bridge, making approximate cost of concrete road between Leavenworth and Wenatchee, \$800,000. It was recommended

ed that election be called and bonds issued and sold at earliest possible moment.

**Wash., Mount Vernon**—Commissioners of Skagit County have voted to instruct County Auditor that County Commissioners would be open to receive bids for \$350,000 worth of road bonds, bids to be opened Sept. 15. It is probable at this time some definite action will be taken by Commissioners to finally dispose of the 1919 issue of road bonds, which has been let, recalled and again bid on several times.

**Wash., North Yakima**—Comrs. of Yakima Co. petitioned for about 20 miles of road in Nob Hill, Corviche, Tieton & Naches districts; estimate, \$140,000. Address County Engr.

**Wash., Tacoma**—Specifications for 95 mi. of roads to be constructed in Pierce Co., from funds provided by special bond levy of \$2,500,000, will be ready in a fortnight, according to Co. Engr. Ernest White. Specifications will call for concrete, bitulithic or asphaltic concrete. Plan is to give all work to one contractor, and the bids, on which contractors are already working, will be made for the entire 95 mi. of 21 separate roads.

**W. Va., Charleston**—Road improvement: \$650,000. Cabin Creek Dist. Engr. P. J. Walsh, L. C. Nassey, Clerk, Kanawha Co. Bond issue passed.

**W. Va., Petersburg**—About nine mi. of road planned between Pansy and Arthur, Grant Co.; estimate, \$47,200. Address Co. Rd. Engr.

**W. Va., Weston**—Lewis Co. plans to grade and pave 2½ miles Pole Creek Rd., vitrified brick. About \$108,390. W. K. Spaur, Weston, Engr.

**Wis., De Pere**—City making plans for paving in 1920, involving 32,000 sq. yd. of pavement and 20,000 lin. ft. of curb and gutter. Bill will be received about first of year. H. R. Albert, City Engr., Green Bay, Wis.

**Wis., Monroe**—Greene county hwy. commrs. contemplate spending \$3,000,000 for construction of roads. Plans to mature in spring. A. R. Hirst, commr., Madison.

**Wis., Racine**—Racine County voters approved bond issue of \$2,350,000 to build good roads. Racine County's program calls for building 125 miles of concrete highway within next 6 years.

**Wis., Racine**—By special election, Sept. 9, Racine Co. voted in favor of \$2,350,000 bond issue for good roads. It is expected that large mileage of concrete roads will be built in 1920.

**Wis., West Bend**—Issue of \$2,000,000 road bonds voted in Washington Co. Address Co. Hwy. Comr.

**Brazil, Bahia**—Municipality of Bahia recently opened credits for execution of extensive paving improvements. Paving is to be of asphalt on crushed-stone base, and will be undertaken jointly by city and Companhia Linha Circular de Carris da Bahia, a street car system. American machinery manufacturers may send catalogs printed in Portuguese to Exmo. Sr. Doutor Joaquim Arthur Pedreira Franco Secretario da Agricultura, Comercio, Viação e Obras Públicas, Bahia, Brazil.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**\*Cal., San Francisco**—Advisory Bd. of State Dept. of Engineers awarded following contracts: For construction of section of State highway between Lankershim boulevard and South Sherman way, Los Angeles county, awarded Bryant & Austin, Inc., of Los Angeles, \$48,177.50; engineer's estimate, \$80,676.

For section of highway between Galvan and Irvine, Orange county, awarded George R. Curtis of Los Angeles; \$86,550.66; engineer's estimate, \$104,936.10.

For section of highway between Mendocino-Lake county line and Lakeport, awarded F. C. McIntire of Stockton; \$116,100.00; engineer's estimate, \$98,140.90.

For section of highway between Divide and Orcutt, Santa Barbara county, awarded F. C. McIntire of Stockton; \$39,436.53; engineer's estimate, \$42,594.50.

For section of highway between Oakdale and easterly boundary of Stanislaus county, awarded Palmer & McBryde of San Francisco; bid, \$157,942.50; engineers estimate, \$182,619.50.

**\*Cal., Willows**—Bids of four firms for supply of materials and construction of sewer in Sewer District Number 2 have been accepted by Bd. of Trustees. Figures under the four bids total \$27,582.73. Cost of the system will be about \$8,000



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Every dollar the Bell System receives goes to provide telephone service.

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by public authorities. In its last analysis all telephone money goes for wages; wages for labor and wages for the necessary capital which investors have put to work in the Bell System.

The telephone management is the agent of the public. It is entrusted with the task of providing the quality of service the intelligent public demands. The wages of loyal, well-trained employees and the wages of the capital that provide the finest of mechanical equipment and most efficient operation, must be paid. As a public servant, one duty of the telephone management is to obtain rates sufficient to pay for these necessities of service.

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above that figure, because manholes and cost of cutting into main sewer are not provided for under these contracts. Bids accepted were as follows: John Heafey, digging and laying the pipe, \$16,066.18; The California Hydraulic Engraving and Engineering Company, installation of motor and pump, \$914; H. C. Muddox, pipe, \$9,621.55; D. O. Church, cement, \$981.

**Del., Dover**—Following bids received Sept. 11 for paving in Middletown, work for which requires 3,200 cu. yds. concrete roadway, 5,300 lin. ft. concrete curbing, 1,250 sq. yds. concrete gutter, 5,200 cu. yds. excavation: Townsend Constrn. Co., Townsend, Del., \$67,406; Empire Constrn.

Co., Empire Bldg., Phila., Pa., \$66,842.50; Wm. J. Lowe Co., Inc., 2216 Chestnut St., Phila., Pa., \$64,239; Union Paving Co., Wilmington, Del., \$69,500.

**\*Ida., Sandpoint**—City Council recently awarded contract for laying 241,897 sq. ft. of concrete sidewalks to Lord Constrn. Co., of Hamilton, Mont., only bidder. Company is to receive 70c. a cu. yd. for all necessary excavation, 89c. a yard for filling and 14c. a sq. ft. for walk laid.

**\*Ind., Indianapolis**—State Highway Commission has let to C. M. Kirkpatrick, of Greenfield, contract for paving with concrete the .39 of a mile of National road lying within Greenfield city limits. Contract was awarded on bid of \$25,-

657.30, the Commission's estimate.

**\*Ind., Indianapolis**—Contracts for permanent improvement of Winthrop Ave. from 40th to 42d st., with bituminous concrete at \$4.85 a lin. ft., total of \$12,474.22, and for 44th St. with asphalt at \$7 a lin. ft., total of \$17,417.41, were awarded Mansfield Engineering Co.

**\*Ind., Indianapolis**—State highway commission awarded Lawrence Jenkins, of Frankfort, contract for building concrete highway along the range line road from north line of Center township in Howard county north to Miami county line, 2.98 miles, for \$98,395.28. Commission estimate was \$123,034.40.

Federal Paving Company, of Chicago, was lowest bidder on the other road. Road is 11.382 miles of Lincoln highway in Lake county. The Chicago company bid \$418,424.62. This contract has not yet been let and possibly it will be some time before the award is made.

**\*Ind., Indianapolis**—State Hwy. Comm. awarded contracts for 42,826 more mi. of road improvement. Contracts were awarded as follows: National Rd., Vigo Co., West Terre Haute, west to Illinois state line, 4.66 mi., A. J. Yawger & Co., Indianapolis; concrete, \$147,908.10; Comm. estimate for mile, \$36,925.44. Range Line Rd., Howard and Tipton Cos., from south line of Center Twp., Howard Co., south seven mi.; L. C. Hodgins, Kokomo; concrete, \$242,943.34; Comm. estimate for mile, \$42,703.75. French Lick Rd., Warwick Co., Boonville to Venderburg Co. line, 10.275 mi.; S. R. Adams Construction Co., Princeton; concrete, \$432,497.37; Comm. estimate for mile, \$42,703.75. French Lick Rd., Lawrence Co., Bedford to Orange Co. Line, 12.436 mi.; Wabash Construction Co., Vincennes; concrete, \$503,157.54; Comm. estimate for mi., \$42,507.02. Jackson Hwy., Johnson Co., Greenwood to Franklin, 8.452 mi.; Morris & McTurnan, Fairmount; concrete, \$288,397.45; Comm. estimate for mi., \$37,309.91. Comm. will announce later its contract awards made on Lincoln Hwy., Lake Co., Schererville east to Porter Co. Line, 11.382 mi., and the range line road, from north line, Center Twp., Howard Co., north to Miami Co. Line, 2.98 mi.

**\*Ky., Frankfort**—The following bids received by Dept. of Public Roads of Nelson County on Bardstown-Louisville Road, Section A, material rock asphalt. Contract awarded Speed & Parker, of Louisville, Ky., on bid of excavation of earth, \$1,103; rock excavation, \$80; grader work, \$1,595.20; Telford foundation, \$6,487.50; crushed stone, \$22,478.10; rock asphalt, \$28,155; Class A concrete, \$3,150; reinforcing \$228.50; 30 ft. pipe, \$75.60; 478 ft. 18-in. pipe, \$1,673; 24 ft. 24-in. pipe, \$120; 450 lin. ft. 6-in. under drain, \$135; 106 lin. ft. relaying pipe, \$106; removing 5 culverts, \$50; total, \$65,436.90. Other bids were: R. B. Tyler Co., Louisville, Ky., \$66,980.05; J. S. Walton, Covington, Ky., \$67,128.31; Knox Constr Co., Camp Knox, Ky., \$113,307.60; Roland & Roland, Covington, Ky., \$52,398.40, which bid was declared informal because one item was not entered.

**\*Mich., Alma**—Contract has been let to Bartling & Holmes, of this city, to pave 1,200 ft. of Bridge St. north from Michigan Ave. Pavement is to be completed by Oct. 15.

**\*Mich., Grand Rapids**—Kent Co. Rd. Comrs. awarded Golden & Boter contract for construction of Assessment Rd. No. 19. Bid was \$51,241.70. The only other bidder was H. A. Hoxie, of Grand Rapids, whose bid was \$58,557.50. Contract calls for paving with concrete, 16 ft. wide, of Burton St. and of Godfrey Ave., total length of two and two-thirds mi.

**Minn., St. Paul**—Letting of \$79,815 paving contract was recommended by city contracting committee to Fielding and Shepley for work in Macalester Dist. Contract calls for paving Berkeley Ave., from Snelling Ave. to Fredericka St.; Stanford Ave., between same cross streets; Wellesley Ave., for same distance, and Macalester Ave. Estimated cost of project was \$82,825. Streets will be paved with asphalt.

**\*Mont., Billings**—Contract for 44,000 sq. ft. sidewalk awarded to McElroy & Holmden, for \$10,405.

**\*Mont., Great Falls**—Work on two reinforced steel and concrete bridges across Missouri River will be started at once, according to John N. Edy and Paul D. Pratt, engineers of State Hwy. Comm. Porter Bros., of Spokane, have been awarded the contract for \$57,840.

**\*Nev., Carson City**—State Hwy. Dept. awarded contract to John O'Keefe, Goldfield, Nev., for work on road from Minden to point 3.45 mi. north, in Douglas Co., Route 3, Sec. C-1, at bid of \$21,674; engi-

neer's estimate, \$24,407. Other bidders were P. J. Conway & C. G. Sellman Constr. Co., Reno, Nev., \$30,522.90; Niedt & Gavin, Reno, Nev., \$29,413.80; H. Francisco, Laws, Cal., \$31,929.

**N. Y., Albany**—Following proposals received by State Comn. of Hwy.:

Rd. No. 8003, Fredonia-Silver Creek, Part 2, Chataqua Co., 4.29 mi.; engineer's estimate, \$134,419.20—Constantine Constr. Co., Buffalo, N. Y., \$130,517.20; Felton Constr. Corp., Buffalo, N. Y., \$132,613.12.

Rd. No. 1469, Silver Creek-Forestville, Chataqua Co., 4.94 mi.; engineer's estimate, \$109,618.40—Felton Constr. Co., Buffalo, N. Y., \$107,902.18; Town Board, Hanover, N. Y., \$109,449.70.

Rd. No. 763, Hollowville-Craryville, Columbia Co., 7.14 mi.; engineer's estimate, \$78,798—A. Colarosso, Hudson, N. Y., \$74,698; Belmar Contg. Co., Inc., Troy, N. Y., \$78,661.

Rd. No. 1332, Claverack-Chatham, Pt. 2, Columbia Co., 7.77 mi.; engineer's estimate, \$128,418.13—Jos. Walker, Albany, N. Y., \$124,299.28; A. Colarosso, Hudson, N. Y., \$127,158.13.

Rd. No. 5585, Earlville-Hamilton, Cheango and Madison Cos., 6.18 mi.; engineer's estimate, \$91,260.50—H. W. Roberts & Co., Utica, N. Y., \$88,579.40; Piddiford & King, Sherburne, N. Y., \$88,657.50.

Rd. No. 1272, Colchester-Delancey, Delaware Co., 5.84 mi.; engineer's estimate, \$47,189.19—DeGraff & Hogeboom, Inc., Kingston, N. Y., \$44,742.25.

Rd. No. 1440, Franklin-Unadilla, Part 1, Delaware Co., 3.38 mi.; engineer's estimate, \$95,435—Lane Constr. Co., Meriden, Conn., \$80,778.

Rd. No. 1441-A, Delancey-Delhi, Delaware Co., 4.31 mi.; engineer's estimate, \$213,798—Universal Steel Export Co., Inc., N. Y. City, \$203,498; R. Hopkins, Troy, N. Y., \$213,777.

Rd. No. 1333, Collins Center-Springville, Erie Co., 9.14 mi.; engineer's estimate, \$22,192.80—H. C. Schroeder, Rochester, N. Y., \$217,503.20; E. J. Hessel, West Falls, N. Y., \$219,286.80.

Rd. No. 1334-A-1, Transit, Part 4, Erie Co., 3.18 mi.; engineer's estimate, \$113,790—Constantine Constr. Co., Buffalo, N. Y., \$106,252.50; H. C. Schroeder Co., Rochester, N. Y., \$112,378.25.

Rd. No. 1334-B-1, Transit, Part 4, Erie Co., .59 mi.; engineer's estimate, \$31,117.50; H. C. Schroeder, Rochester, N. Y., \$29,721; Myer & Myer Corp., Depew, N. Y., \$30,917.50.

Rd. No. 1491-A, Marilla-Marilla Sta., Erie Co., 1.06 mi.; engineer's estimate, \$25,065.75—Greenfield Constr. Co., Hornell, N. Y., \$23,194.75; Cold Spring Constr. Co., Buffalo, N. Y., \$25,060.75.

Rd. No. 1493, Transit-Wolcottsburg, Erie Co., 3.02 mi.; engineer's estimate, \$68,420.25—P. H. Murray, Rochester, N. Y., \$59,884.25; Hendrickson-McCabe Constr. Co., Syracuse, N. Y., \$68,378.56.

Rd. No. 620, Ephratah-Keoke Center, Part 2, Fulton Co., 5.13 mi.; engineer's estimate, \$134,901.40—E. J. Anderson & Co., Albany, N. Y., \$133,060; H. W. Roverts & Co., Utica, N. Y., \$134,335.50.

Rd. No. 621, St. Johnsville-Oppenheim, Part 2, Fulton Co., 2.90 mi.; engineer's estimate, \$39,367—H. A. Schaupp, Inc., Albany, N. Y., \$34,949.50; W. L. Lawton, Glen Falls, N. Y., \$38,525.

Rd. No. 1098-A, Eagle Bay-Sixth Lake, Hamilton Co., 1.97 mi.; engineer's estimate, \$4,273.25—Rosoff Eng. Co., N. Y. City, \$52,036.45; J. J. Guinan Contg. Co., Brooklyn, N. Y., \$53,825.25.

Rd. No. 5586-A, De Ruyter-New Woodstock, Madison Co., 4.89 mi.; engineer's estimate, \$119,998.80—Conroy & Nixdorf, Oneida, N. Y., \$109,052; H. W. Roberts Co., Utica, N. Y., \$119,080.

Rd. No. 1278, Canandaigua-Orleans, Ontario Co., 8.63 mi.; engineer's estimate, \$31,948.15—Monroe Roads Co., Pittsford, N. Y., \$31,270.85; Greenfield Constr. Co., Hornell, N. Y., \$31,853.35.

Rd. No. 5573, Cornwall-West Point, Part 3, Orange Co., 1.17 mi.; engineer's estimate, \$30,534—Troup & Sherwood Co., Haverstraw, N. Y., \$29,199; J. L. Hayes Constr. Co., Inc., Yonkers, N. Y., \$30,242.50.

Rd. No. 1302, Morris-Oneonta, Otsego Co., 12.66 mi.; engineer's estimate, \$229,006.45—R. Hopkins, Troy, N. Y., \$228,988.

Rd. No. 1452, Richford-Harford Mills, Tioga Co., 5.50 mi.; engineer's estimate, \$87,189.50; D. W. Robbins, Inc., Utica, N. Y., \$98,289.50.

Rd. No. 1431, Brookton-Speedsville, Part 1, and Slatersville Springs-Caroline, Parts 3 and 4, Tompkins Co., 3.38 mi.; engineer's estimate, \$71,375.75—P. D. Conley, Ithaca, N. Y., \$70,813.76.

Rd. No. 1433, Cortland-Croton, Parts 3 and 4, Tompkins Co., 5.86 mi.; engi-

neer's estimate, \$133,646—F. J. Foote, Inc., Nunda, N. Y., \$131,440.27.

**\*O., Cleveland**—Cleveland Trinidad Paving Co. has been awarded contract for paving Franklin ave., \$35,000.

**\*O., Columbus**—Following bids received by State Hwy. Dept. on Sept. 12: No. 1, Ashtabula Co., Cleveland-Meadville Rd.—Dorsey Constr. Co., Findlay, O., \$41,674.64.

No. 2, Columbiana Co., Lisbon-Canton Southern Rd.—Jones Const. Co., Salem, O., \$19,765.50; W. F. Payne, Springfield, O., \$19,765.50.

No. 3, Gallie Co., Gallipolis-Ironton Rd.—Miller & Miller, Gallipolis, O., \$23,168.72.

No. 5, Harrison Co., Contracts 1 and 2, Cadiz-Carrollton Rd.—R. L. Timmons & Son, Cadiz, O., No. 1, \$63,581.60; No. 2, \$12,046.95; L. B. Wilson, Newark, O., No. 1, \$63,074; No. 2, \$12,045.25.

No. 8, Lawrence Co., Alternate, Ohio River Rd.—Mahl Bros., Ironton, O., bituminous macadam, \$89,274.78.

No. 9, Lorain Co., Milan-Elyria Rd.—Ohio Contracting Co., Elyria, O., \$47,195.88; Elyria Const. Co., Elyria, O., \$51,511.16.

No. 11, Mercer Co., Contracts No. 1 and No. 2, St. Marys-Celina—Jos. Lynn, Paulding, O., No. 1, \$153,478.23; No. 2, \$6,870.90; G. H. Heiner & Son, Celina, O., No. 1, \$158,311.92; No. 2, \$6,917.45.

No. 12, Mercer Co., Celina-Wabash Rd.—M. L. Hinton Co., Celina, O., \$51,709.42; G. H. Heffner & Sons, Celina, O., \$52,098.79.

No. 13, Montgomery Co., Dayton-Indianapolis Rd.—Foster-Reighert Const. Co., Dayton, O., \$24,595.50; D. A. Onkst & Son, Dayton, O., \$25,285.42.

No. 14, Montgomery Co., Dayton-Germantown Rd. alternate bids, A, concrete; B, bituminous macadam—Williams & Little Co., Cleveland, A, \$83,842.02; J. C. McCann, Columbus, O., B, \$99,868.27.

No. 16, Noble Co., Caldwell-Woodsfield Rd.—W. M. Gray, Bowling Green, O., \$92,440.07; No. 17, Noble Co., Caldwell-Woodsfield—W. M. Gray, Bowling Green, O., \$57,898.53; No. 18, Noble Co., Caldwell-Woodsfield—W. M. Gray, Bowling Green, O., \$59,833.75; No. 19, Perry Co., W. M. Gray, Bowling Green, O., \$48,522.24; No. 20, Perry Co., Newark-New Lexington—W. M. Gray, Bowling Green, O., \$77,204.48.

No. 21, Pickaway Co., Columbus-Portsmouth Rd.—Winchell & McDaniel, Columbus, O., \$15,606.19; W. Justice, Circleville, O., \$16,733.

No. 23, Ross Co., A, concrete; B, brick; Dayton-Chillicothe—O. M. Junk, Chillicothe, O., A, \$22,785.86; B, \$15,726.26; W. H. Ringwald & Sons, Chillicothe, A, \$23,942.84.

No. 24 Ross Co., A, concrete; B, mono brick; Dayton-Chillicothe—O. M. Junk, Chillicothe, O., A, \$25,876.50; B, \$15,902.75; W. H. Ringwald & Sons, Chillicothe, A, \$27,444.68.

No. 25, Scioto Co., Portsmouth-Jackson—S. Monroe & Sons Co., Portsmouth, O., \$57,770.60; Kelley Bros., Portsmouth, O., \$58,592.50.

No. 26, Shelby Co., Sidney-Wapakoneta Rd.—F. E. Milligan, Mt. Victory, O., \$99,265.74; John Frantz, Sidney, O., \$102,560.60.

No. 27, Shelby Co., Piqua-Sidney—F. E. Milligan, Mt. Victory, O., \$91,990.64; John Frantz, Sidney, O., \$95,712.95.

No. 29, Tuscarawas Co., Canton-Canal Dover—J. C. McCann, Columbus, O., \$41,662.82; Seiple & Wolfe Const. Co., Youngstown, O., \$38,579.90.

No. 30, Vinton Co., McArthur-Athens Rd.—E. N. Turner, Logan, O., \$1,912.95; J. C. Imboden, Logan, O., \$1,941.30.

No. 31, Vinton Co., McArthur-Jackson Rd.—E. S. King, McArthur, O., \$5,072.60.

No. 32, Vinton Co., McArthur-Gallipolis Rd.—Ryan Stone & Const. Co., Maumee, O., \$22,822.64.

No. 33, Warren Co., Cincinnati-Columbus Rd.—Wilson Const. Co., Xenia, O., \$64,590.03; Bean & Co., Highland, O., \$64,794.03; J. L. Radebaugh, Montgomery, O., \$64,590.03.

No. 34, Wood Co., Fremont-Perrysburg, A, bituminous macadam, T-1; B, bituminous macadam, A-1—F. F. Walton Co., Upper Sandusky, O., A, \$77,850; Muldoon & Bergman, Genoa, O., A, \$71,871.10; B, \$69,921.08.

No. 35, Wood Co., Fremont-Perrysburg Rd., Type A, bituminous macadam (T1); Type B, bituminous macadam, A-1—F. F. Walton Co., Upper Sandusky, O., A, \$66,899.80; Muldoon & Bergman, Genoa, O., A, \$61,582.99; B, \$59,782.99.

**\*Wash., Colville**—Council awarded contract for paving four blocks on Main and 1st Sts. with concrete and for eight mi. of cement walks to W. J. Doust, of Spokane, on bid of \$22,787. Other bidders were: J. W. Baylor, \$24,699.27; W. J. Doust, \$22,787.23; C. M. Payne, \$24,649.67;



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by hand is a slow and tiresome process which requires frequent rests for the laborers. This means a longer time to do the work and a waste of the shoveler's time and energy. Contrast this method with the Brownhoist way shown above, in which the material is handled rapidly and continuously by the one operator, who remains up in his cab and away from the material and its dust. He does a good, clean job, and when the car is full the crane will switch it wherever it is needed in the plant. The Brownhoist Crane and Bucket are a man and money saver on many kinds of work, and it should be worth your while to let us go over your particular problem together and see if we cannot find a solution for it. Just get in touch with us.

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**Alloway & George**, \$24,089.86; **Root & Joslin**, \$24,888.91.

**\*Wash., Everett**.—Bids opened by city council for paving of Norton Street with approximately 8,171 yards of concrete resulted as follows: **J. W. Hoover, Everett**, \$30,717.50; **R. H. Travers, Seattle**, \$34,588.00; **Kaiser Paving Co., Seattle**, \$32,128.50. Awarded to **J. W. Hoover**.

**Wash., Olympia**.—**J. R. Wood, 621 Valley St., Seattle, Wash.**, was low bidder on Quiniquit River bridge, Gray's Harbor County. Bid as follows: 540 lin. ft. piling in place, \$540; 76 cu. yds. Class "A" concrete, \$2,736; 125 cu. yds. Class "B" concrete, \$4,216; 7,400 lbs. reinf. steel, \$1,100; 6,200 lbs.  $\frac{1}{4}$ -in. steel plate for pier shell, \$744; 258,500 lbs. structural steel, \$32,312.50; 100 cu. yds. rlp rap, \$500; 1 test, \$1,000; total, \$43,158.50. Other bidders were: **R. E. Meitte, Yeon Bldg., Portland, Ore.**, \$44,181.50; **Jarvis & Ward, Olson, Wash.**, \$47,377; **Security Bridge Co., Lewiston, Ida.**, \$47,983; **Illinois Steel Bridge Co., 611 Hutton Bldg., Spokane, Wash.**, \$47,600; **Union Bridge Co., Seattle, Wash.**, \$46,264.50.

**\*Wash., Olympia**.—Ristvedt Bragg Co., Coifax, Wash., awarded contract for Inland Empire Hwy. in Whitman County, as follows: 160,075 cu. yds. common excavation, \$88,041.25; 5,590 cu. yds. loose rock excavation, \$5,590; 11,080 cu. yds. solid rock excavation, \$25,484; 71,170 cu. yds. overhauling, \$2,847.20; 30,093 cu. yds. crushed rock surfacing, \$104,710.47; 373.49 cu. yds. concrete, 1st class, \$12,698.66; 115.60 cu. yds. concrete, 2d class, \$3,814.80; 31,425 lbs. reinf. steel bars, \$2,828.25; 1,656 ft. reinf. concrete pipe, 18-in., \$1,899.12; 1,048 ft. reinf. concrete pipe, 24-in., \$6,487.12; 500 ft. guard rail, \$500. For concrete arch bridges—Concrete, 1st class, \$5,610; concrete, 2d class, \$7,953; reinf. steel bars, \$1,296; total, \$275,759.87. Other bidders were: **Clifton, Applegate & Toole, Hutton Bldg., Spokane, Wash.**, \$275,772.56; **D. H. Traphagen, 229 Walker Bldg., Seattle, Wash.**, \$304,320.80.

**\*Wash., Olympia**.—General Constrn. Co., Spokane, Wash., was awarded contract for work on Cheney to Tyler road in Spokane County, as follows: Clearing 15.97 acres, \$958.20; grubbing, 9.97 acres, \$1,296.10; 21,820 cu. yds. common excavation, \$25,093; 3,250 cu. yds. loose rock excavation, \$3,737.50; 4,590 cu. yds. solid rock excavation, \$11,475; 10,700 cu. yds. overhauling, \$428; 12,451 cu. yds. crushed rock surfacing, \$33,617.70; 136.34 cu. yds. concrete, 1st class, \$3,544.84; 13.20 cu. yds. concrete, 2d class, \$343.20; 119.13 lbs. steel reinf. bars, \$1,191.30; 260 ft. reinf. concrete pipe, 18-in., \$689; 28 ft. reinf. concrete pipe, 30-in., \$131.60; total, \$82,505.44. Other bids were: **Mitchell Bros., 1403 7th Ave., Spokane**, \$82,856.93; **R. R. Sloan, 451 Stuart Bldg., Seattle**, \$83,115.23; **C. M. Payne, Spokane**, \$84,669.25.

**\*Wash., Olympia**.—Contract awarded **E. J. McQuaid, 603 Seaboard Bldg., Seattle, Wash.**, for work on Marysville-Sylvania road in Snohomish County, as follows: Clearing 5.70 acres, \$1,282.50; grubbing, 4.10 acres, \$1,332.50; common excavation of 14,270 cu. yds., \$8,562; overhauling, 118,500 cu. yds., \$3,555; 150 lin. ft. reinf. conc. pipe, 18-in., \$450; total, \$15,182. Other bids received were: **P. Wongsmo, Box 214, Arlington, Wash.**, \$17,410; **Reinseit Bros., East Stanwood, Wash.**, \$17,952.50; **Kaiser Paving Co., 923 Joshua Green Bldg., Seattle, Wash.**, \$21,531.50; **J. W. Hoover Co., Everett, Wash.**, \$22,363.

**\*W. Va., Keyser**.—Co. Court accepted bid of **H. W. Kaylor & Co., of Hagerstown, Md.** for constructing Elk Dist. Rd. in Mineral Co. Bid was \$247,625.88. **S. H. Lea, Co. Engr.**

**\*Wis., Green Bay**.—Following bids received on Lake Shore Rd., Manitowoc Co., Federal Aid Project No. 2: **\*J. Young, Oconto, Wis.**, \$48,219.12; **Murphy Const. Co., Manitowoc, Wis.**, \$52,188.54. Contract awarded **J. Young**.

**\*Wis., Madison**.—State Hwy. Comm. let contracts for the following roads: The Barron-Turtle Lake Rd., in Barron Co., known as Federal Aid Project No. 101, to Swanson & Johnson, 5816 Oakes Ave., Superior, Wis., for \$48,797.06; the Fountain City-Winona Rd., in Buffalo Co., Federal Aid Project No. 87, to Funk & Rasmussen, La Crosse, Wis., for \$42,819.68.

**\*Wis., Madison**.—There were two bidders for work on Co. Line Rd., in Dodge and Jefferson Cos., Federal Aid Project No. 72, John Finley, Janesville, Wis., \$20,344.20; **P. W. Ryan & Sons, Janesville, Wis.**, \$21,354.80.

**\*Wis., Madison**.—**S. F. Madden & Sons, Edgerton, Wis.**, was only bidder on Watertown Plank Rd. in Jefferson Co.

**Federal Aid Project No. 59**.—Bid as follows: Excavation, earth, 14,601 cu. yd., at 75 cents, \$10,658.73; borrow, 371 cu. yd., at 73 cents, \$270.83; concrete in culverts, 89.7 cu. yd., at \$20, \$1,794; tile drain, 6-in., 1,224 lin. ft., at \$1, \$1,224; tile drain, 12-in., 852 lin. ft., at \$1.15, \$979.80; vitrified sewer pipe, 12-in., 178 lin. ft., at \$1.25, \$222.50; vitrified sewer pipe, 6-in., 4 lin. ft., at \$1, \$4; total, \$15,153.86.

**\*Wis., Milwaukee**.—The following roads in Milwaukee county were let to Stein Construction Co., Milwaukee, Wisconsin: Burleigh Street No. 3, excavation, 1,800 cu. yds., \$1,800; concrete surfacing, 4,300 sq. yds., at \$2.19, \$9,417; concrete culverts, 20 cu. yds., at \$26, \$520.00; total \$11,737.

Wauwatosa avenue No. 1, City and Town of Wauwatosa, Milwaukee county, excavation, 5,000 cu. yds., at \$1.05, \$5,250; concrete surfacing, 20,500 cu. yds., \$1.83, \$37,515; concrete culverts, 17 cu. yds., \$20, \$340.00; concrete bridge, 53 cu. yds., at \$24, \$1,272; total \$44,377.

### SEWERAGE AND SANITATION

**Fla., De Funik Springs**.—Election Sept. 23 on bond issue of \$25,000 for sewer extensions.

**Ind., Greenfield**.—Bids will be received by City Clk. for construction of Meek St. sanitary sewer.—**Chas. Boone, City Engr.**

**Ky., Danville**.—City will vote in Nov. on bond issue of \$15,000 for sewers. **W. J. McIntyre, Mayor**.

**Md., St. Michaels**.—Bd. Comrs. had plans prepared for sewage disposal plant. About \$35,000. **H. C. Lieb, Pres.**; **L. J. Houston, Jr., Fredericksburg, Va.**, Engr.

**Md., St. Michaels**.—Sewage disposal plant to be constructed. **H. C. Lieb, Pres. Bd. of Comms.**

**Mass., Northbridge**.—The National City Co., of New York, was successful bidder for 4 1/2 per cent semi-annual 1-12-yr. sewer bonds to amount of \$60,000.

**Mo., Columbia**.—City on Sept. 2 voted \$128,000 20-yr. sewer system and sewerage disposal plant bonds.

**Mo., St. Louis**.—Plans to convert Cahokia Creek into a sewer were discussed at conference by the commissioners of East St. Louis. Engineers estimated improvement would cost \$2,400,000.

**Mo., Sedalia**.—City plans erection of sewage disposal and incinerator plant costing \$30,000. **F. T. Leaming, Engr.**, City Hall.

**Neb., Franklin**.—City receives bids in spring installing sanitary sewers in various streets. About \$50,000. **Grant, Fulton & Letton, 505 Bankers Life Bldg., Lincoln, Engrs.**

**Neb., Lincoln**.—\$100,000 bonds for sewerage system has been carried.

**N. J., Ridgewood**.—Sewer extensions are planned for several districts. Address **Vil. Engr. Livermore**.

**N. Y. (Long Island), Flushing**.—Boro. Pres. Connelly has given his approval to plans and specifications for construction of Linden Ave. sewer, estimated at \$800,000.

**N. D., Minot**.—Election Sept. 29, on bond issue of \$280,000 for sewerage system. Chairman of City Comm.

**Ohio, Cleveland**.—Investigation is under way to decide necessity of four sewerage disposal plant, \$678,000. **Alex Bernstein, Dir. of Serv.**

**Okla., Hamilton**.—State Bd. of Health has approved plans submitted by City Engr. Frank Weaver for \$150,000 sewer system.

**Okla., Springfield**.—City soon lets contract furnishing and laying 8-24-in. vitrified pipe sewers in Rubsam, Yellow Springs and Grant Sts. About \$18,000. **W. E. Lucas, City Engr.**

**Oklahoma, Sallisaw**.—City has issued \$140,000 for sewers and improvements. Address the Mayor.

**S. C., Bamberg**.—Survey being made for sewer system. **G. D. Ryan, Engr.**

**Tex., El Paso**.—Election on Oct. 4 on \$100,000 bond issue for sewers. **Charles Davis, Mayor**.

**Tex., Lampasas**.—Committee of citizens has been canvassing for purpose of securing co-operation for installing sewerage system here. It is believed the system will be installed.

**Tex., Plainview**.—City Council has voted to expend \$50,000 on sanitary sewer; an Imhoff tank will be built and 9,000 ft. of 15-in. main will be laid, with

some lesser extensions in the city. **R. P. Smyth, City Engr.**

**Wash., Tacoma**.—Estimates showing how the money to be spent for public improvements this year and in 1920 will be distributed over number of necessary projects. Statement prepared by Mr. Tiedeman sets forth that sewers now contracted for and to be built in 1920, will cost \$2,112,715; water mains and improvements of water plant, including the Swan Lake reservoir, \$6,448,661; sea wall on Railroad Ave. and other improvements on the water front and in the industrial district, \$1,798,605. The total estimate for all improvements of this character is about \$12,000,000.

**Wash., Yakima**.—Taxpayers adopted plan for general sewer system and authorized issue of \$350,000 bonds to pay construction.

**Wis., Brillion**.—City having plans prepared building sewage disposal plant, also excavating and laying four mi. 10-12-in. vitrified pipe sewers and water mains in Main St. Cost, between \$20,000 and \$40,000. **J. J. Donohue, York Bldg., Sheboygan, Engr.**

**Wis., Eau Claire**.—With the \$75,000 trunk sewer bond issue overwhelmingly approved by voters of Eau Claire, City Council is going ahead with plants for starting work on the trunk sewers at an early date, and continuing the work throughout fall and winter. Trunk sewers will be built of three to six-ft. pipes.

**Wis., Marquesa**.—See "Water Supply."

**Wash., Wenatchee**.—Council plans construction of sewer system covering nearly one-half area in southern part of city. It is estimated the sewer system will cost approximately \$200,000, to be paid for by bonds issued by local improvement district.

### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**\*Wis., Watertown**.—Contracts have been let by joint Town Boards of Lebanon and Emmet, Dodge County, for completion of famous Silver Creek Drainage District work. The excavation will be done by Seth Day, Rock Island, Ill., whose bid, 18 1/4 c. per cu. yd., was the lowest. **O. F. Schwefel, Lebanon, furnishes tile at \$4,403.64. Arnold Kraeft, Watertown, is engineer of the project.**

### WATER SUPPLY

**Ariz., Globe**.—City plans election to vote on \$250,000 bonds to remodel present water pumping station and replace present water mains with cast iron pipe. **Johnson & Benham, Firestone Bldg., Kansas City, Mo.**, Engrs.

**Cal., Auburn**.—Election is proposed to vote water and park bonds to amount of \$120,000.

**Cal., Porterville**.—South Tule Independent Ditch Co. plans to build distributing system; cost, \$300,000; also dam to impound waters of South Tule River; cost, between \$30,000 and \$50,000. **H. H. Holly, Visalia, Engr.**

**Conn., Berlin**.—Public water system is called for by townspeople. Address Dr. R. M. Griswold.

**Fla., Ft. Myers**.—City voted \$45,000 bonds to extend water mains and sewerage system. Property owners will appropriate like amount.

**Ida., McCammon**.—Bond election will be held on the 20th day of September, 1919. Bonds of said village in the aggregate amount of \$35,000 to provide money with which to acquire, by purchase, or otherwise, Crystal Springs, and water system connected therewith usually called the Harkness System, and to enlarge, improve, alter construction and repair said system.

**La., Jonesboro**.—City has voted \$28,000 water works bonds.

**Mass., North Adams**.—City of North Adams has awarded Bonbright & Co. \$20,000 of 4 1/2 per cent coupon water department equipment bonds, dated Sept. 3, 1919, and maturing \$4,000, 1920 to 1924 inclusive.

**Minn., Bemidji**.—City Council plans to establish water system in Fifth Ward. It is estimated the new well will cost about \$25,000.

**Minn., Duluth**.—City Council considers ordinance appropriating \$40,000 for lay-

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ing gas and water mains for season of 1919.

**Minn., Janesville**—Special election to be held on \$22,000 bond issue for water works. R. R. Brown, Village Clerk.

**Minn., Janesville**—City will hold election to vote \$22,000 bond issue for extension of water mains. R. R. Brown, Vill. Clk.

**Minn., Mankato**—City Council authorized \$250,000 bonds for water works system. F. W. Bates, City Clk.

**Mont., Great Falls**—Water works bond issue of \$225,000 soon to be voted. Three ml. of 24-in. mains is planned.

**Nev., Winnemucca**—Winnemucca Water & Light Co. plans to enlarge present system and relay feeder lines. About \$25,000.

**N. J., Blairstown**—There is an agitation for increased water supply and larger mains. William R. Rawson, Supt.

**Ohio., Cleveland**—W. H. Noble, a New York engineer, has been asked to recommend methods for repairs at filtration plant, which are deemed necessary by increased consumption of water. Total number of filters at plant is 32. Water Comr. Martin states that cost of necessary repairs will be \$250,000.

**N. J., Gloucester**—Water works are to be rebuilt at estimated cost \$35,000. Address Council Clerk.

**N. J., South Amboy**—Plans and specifications for new water plant have been accepted by City Council. Address Councilman Delaney.

**Ohio., Canton**—\$750,000 bonds for water works will be sold at once and used as follows: Street mains and extensions, \$150,000; meter program, \$75,000; equalization basin at Dan Smith Farm, \$280,000; northeast end pumping station, \$240,000.

**Ohio., Columbus**—Council Finance Committee will submit to popular vote bond issue of \$3,000,000 for extending water works system. Proceeds will be used in constructing additional storage, purifying, softening and distributing facilities, and obtaining necessary real estate and rights of way. District main from Scioto River to High St. with branches will cost \$550,000. A new dam in Scioto River above Dublin will cost \$1,250,000. Reservoir, \$135,800; raising present storage dam, \$125,000; enlarging present purification plant, \$297,000; new pumping machinery, \$135,000. Jerry O'Shaughnessy is Supt. of Water Works.

**Ohio., Defiance**—Council has fixed Oct. 7 as date of bond issue of \$180,000, to cover cost of building a water-softening and filtration plant. Plans are to be prepared by engineers, Hill & Ferguson, of New York, who have recommended that plant be built to secure water from the Maumee River.

**Ohio., Geneva**—Election held Aug. 12 resulted in favor of issuing water bonds to amount of \$30,000.

**Ohio., Portsmouth**—Sealed proposals will be received until Oct. 10 for water extension bonds of \$30,000. L. A. Zucker, City Audr.

**Ohio., Claysville**—Council has authorized issue of water works bonds in sum of \$65,000.

**Ohio., Warren**—City is confronted with proposition of increasing water rates 300 per cent or constructing municipal water works system. Trumbull Public Service Co. states that necessary improvements will cost \$2,000,000.

**Ohio., Wellington**—Guy E. Wells, Mayor of this village, states that resolution to issue bonds of \$25,000 for enlarging and improving water works has passed the Council.

**Ohio., Ada**—Election to be held Sept. 18 on bond issue of \$250,000 for water works.

**Ohio., Altus**—City has voted \$45,000 for water works.

**Ohio., Collinsville**—City voted \$40,000 bonds for water filtration works.

**Ohio., Hartshorn**—Bond issue of \$25,000 for water works has been voted. Address City Clerk.

**Ohio., Newkirk**—City voted \$70,000 bonds to extend waterworks.

**Ohio., Pawhuska**—Bond issue of \$238,053 for water works has been approved.

**Ore., Monmouth**—Bond issue of \$60,000 for water works improvements to be voted on soon.

**Pa., Philadelphia**—Proposals for furnishing and installing complete at Queen Lane pumping station four turbo-centrifugal pumping units, with capacity of 40,000,000 every 24 hours, were received and opened by Dept. of Pub. Wks. It was announced by Dir. Datesman that no contract would be awarded until Supreme Court had passed upon legality of municipal loan of \$12,970,000, which contains item of \$3,000,000 for improve-

ment and extension of city's water system. Some of the bidders submitted alternate proposals on various types of air pumps, bids being as follows: Worthington Pump and Machine Co., \$415,886 and \$394,136; David Doyle, \$372,300, \$380,000, \$397,000 and \$404,000; Southwark Foundry and Machine Co., \$355,000; Westinghouse Co., \$407,700; Poole Engineering and Machine Co., \$385,000.

**S. C., Clinton**—City desires bids for drilling one or two wells 10-in. or 12-in. diameter at start, 8-in. or 10-in. finish, 500 to 700 ft. deep, and a centrifugal pump 750 to 1,000 gallons capacity, to work again 55 lbs. B. B. Mills, Supt.

**S. D., Spearfish**—Special election, Sept. 16, for \$50,000 to install water works system.

**Tex., Humble**—An important housing scheme calls for installation of water supply system. Address E. Jones, Constr. Engr., Humble Oil Co.

**Wash., Bellingham**—G. L. Parker of U. S. Geological Survey and W. Seitz, Engr., of U. S. Geological Survey, will make water power reconnaissance of the north fork of the Nooksack River.

**Wash., Cle Elum**—Water works bonds to amount of \$50,000, recently authorized, have been sold to Messrs. Keller Bros., of Portland, at par.

**Wash., Reardan**—Spokane & Eastern Trust Co. of Spokane was successful bidder for 20-year water bonds to amount of \$40,000.

**Wash., Tacoma**—See "Sewerage."

**Wash., Wenatchee**—Water extension bonds to amount of \$50,000 have been sold to Spokane & Eastern Trust Co., of Spokane, at par.

**Wash., Wenatchee**—Council plans immediate expenditure of \$50,000 for extensions to water system. The plan involves extension of city's gravity line up Equilchuck creek. This will furnish more than half the present city requirements for water and effect a saving of \$500 per month in pumping plant expenses.

**Wis., Markesan**—Election held Sept. 2 resulted in favor of issuing 5% water and sewer bonds to amount of \$55,000.

**N. B., St. John**—City proposes to spend about \$300,000 for increasing water supply.

**Ont., Peterborough**—Filtration plant cost \$200,000, will probably be installed. Address Clk. of Council.

**Ont., Waterford**—It is proposed to install water system costing about \$40,000. Address W. H. Moore, Comr. of Utilities.

## LIGHTING AND POWER

**N. Y., Lockport**—City has under consideration erection of municipal light plant.

**O., Lima**—G. H. Gampers, Lighting Engr., of Columbus, has completed estimates for boulevard and municipal lighting systems. Lighting system estimate is \$100,000 and boulevard \$12,000.

**O., Oberlin**—Bond issue of \$50,000 has been authorized for construction of municipal electric lighting plant. This is second election on this issue, first having failed.

**O., Wooster**—Orrville Bd. of Public Affairs has requested financial assistance in completion of enlarging of municipal light plant, and installation of additional units. Estimate cost, \$28,000.

**Okla., Gotebo**—Electric light bonds to amount of \$20,000, recently authorized, have been sold.

**Okla., Pawhuska**—Bond issue of \$67,567 for electric lights has been approved.

**Pa., Greencastle**—Town Council is considering plans for establishment of municipal electric light and power plant. Plans are under way for co-operation in erection of plant with Boro. of Waynesboro, which is also planning for similar station.

**Pa., Grove City**—Election will be held Sept. 16 to vote electric light improvement bonds to amount of \$45,000.

**S. D., Gregory**—\$50,000 bonds for electric lights have been sold at par.

**Tenn., Centreville**—Common Council is planning for immediate construction of municipal electric plant to cost about \$15,000. Owen L. Bates is Mayor.

**Tex., Bryan**—Sealed bids will be received until Sept. 3 by city secretary for bonds of \$75,000 for power plant.

## FIRE

**Ill., Benton**—Election held Sept. 16, on question of issuing bonds for purpose of building and equipping Fire Dept.

**Mass., Webster**—Proposed that town appropriate \$11,500 to buy automobile triple combination fire truck. This will give town an all-motor department.

**N. J., Egg Harbor**—Purchase of new fire apparatus being considered by City Fire Dept. Address Chief, Fire Dept.

**N. J., Red Bank**—\$10,000 to be raised by bond issue for apparatus to motorize fire companies of Shrewsbury and Little Silver.

**Ohio., Akron**—Fire bond issue of \$166,000 for building new fire station and buying apparatus carried by large majority.

**Ohio., Canton**—Ordinance appropriating \$13,500 to expand police and fire alarm systems of this city has passed council. This will be preliminary to permanent system to cost \$33,000 to be constructed later. Program calls for extending 4 cables and installation of police and fire alarm boxes. Safety director Hamaker states that work will be done under supervision of Arnold Maurer, city electrician.

**Ohio., Chillicothe**—Council intends to install fire alarm system and more apparatus.

**Ohio., Cleveland**—All bids for fire apparatus to cost \$200,000 were rejected and will soon be readvertised.

**Ohio., Cleveland**—Members of Rotary Club, under direction of committee headed by R. H. Perdue, Leader-News Bldg., have launched campaign for improved fire protection conditions in Cleveland factories and industrial plants. This action was taken following address by State Fire Marshal.

**Ohio., East Liverpool**—Bonds of \$13,000 for fire equipment have been purchased.

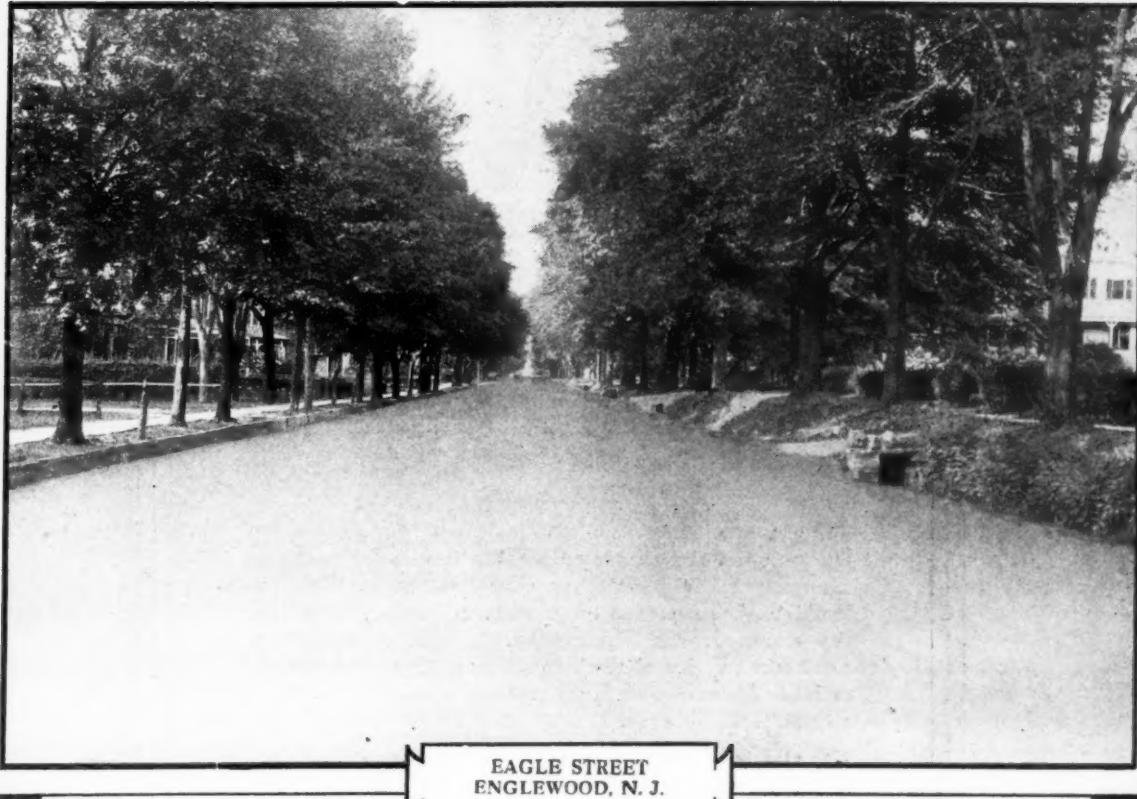
**Ohio., Massillon**—City Solicitor G. W. Williams states bids for contract to place police and fire alarm wires in downtown section underground and to rewire remainder of system will be received. Bond issue for this improvement is \$12,000.

**Ohio., Ponca**—Mayor W. H. McFadden recommends that bond issue of \$50,000 be made for purchase of fire apparatus. Election to be held soon.

**Pa., Glassport**—Fire Dept. has asked for masks and other equipment.

**Pa., McDonald**—Town has voted in favor of \$70,000 bond issue for Fire Dept.

**S. D., Mitchell**—Election, Sept. 9, to vote \$25,000 bonds for building and equipping city fire station and hose house. R. E. Davis, City Aud.



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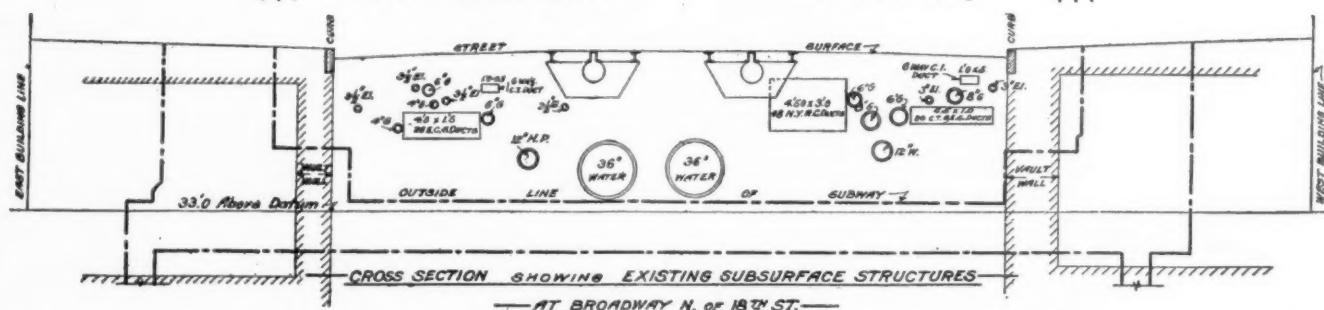
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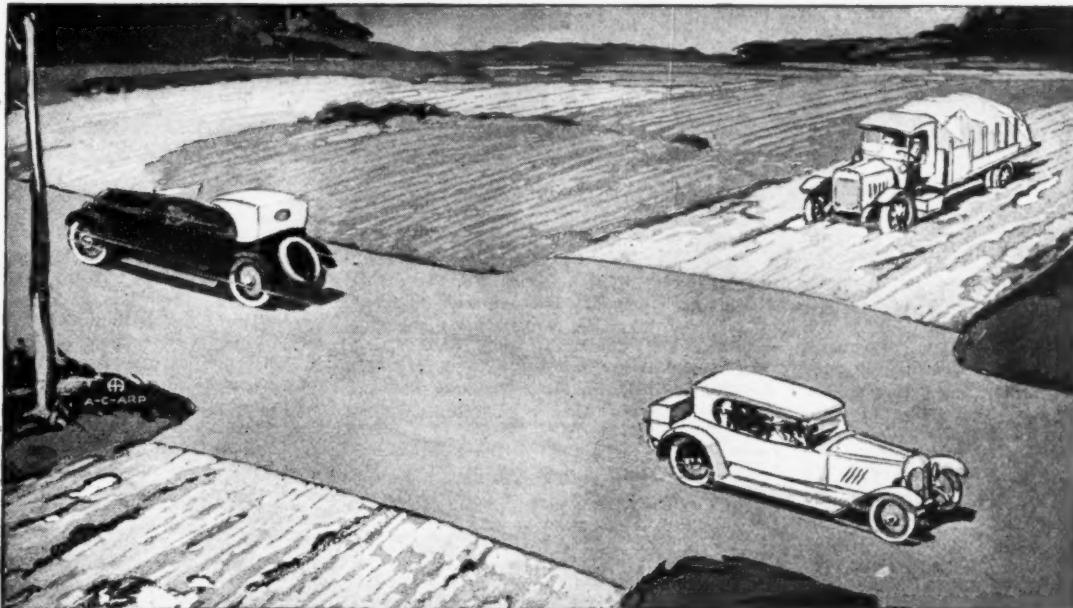
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Pennsylvania State Highway Department, Harrisburg, Pa.—Sealed proposals will be received at the State Capitol until 10:00 A. M., September 30, 1919, when bids will be publicly opened and scheduled, and contracts awarded as soon thereafter as possible for the reconstruction of the following pavements: 11,640 linear feet of One Course Reinforced Concrete in Armstrong County; 9,577 linear feet of pavement, consisting of 5,856 linear feet of Bituminous Surface Course on present foundation and 3,721 linear feet of Bituminous Surface Course on a Concrete Foundation in Bucks County; 12,947 linear feet of either One Course Reinforced Concrete and Hillside Vitrified Brick or Vitrified Brick and 6,634 linear feet of One Course Reinforced Concrete in Cambria County; 5,326 linear feet of Vitrified Brick in Centre County; 28,292 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete and 21,619 linear feet of One Course Reinforced Concrete in Chester County; 4,265 linear feet of either Bituminous Surface Course and Hillside Vitrified Brick on a Concrete Foundation or One Course Reinforced Concrete in Clinton County; 18,514 linear feet of One Course Reinforced Concrete and Hillside Vitrified Brick in Crawford County; 26,713 linear feet of either One Course Reinforced Concrete or Bituminous Surface Course on a Concrete Foundation in Delaware County; 37,521 linear feet of either Bituminous Surface Course on a Concrete Foundation or One Course Reinforced Concrete and 32,316 linear feet of One Course Reinforced Concrete in Erie County; 25,164 linear feet of One Course Reinforced Concrete and Hillside Vitrified Brick in Fayette County; 23,201 linear feet of One Course Reinforced Concrete in Greene County; 19,618 linear feet of One Course Reinforced Concrete in Lancaster County; also 110,170 linear feet of One Course Reinforced Concrete and Hill-

side Vitrified Brick in Westmoreland County. Bidding blanks and specifications may be obtained free, and plans upon payment of \$2.50 per set, upon application to State Highway Department, Harrisburg, Pa. No refund for plans returned. They can also be seen at office of State Highway Department, Harrisburg; 1001 Chestnut Street, Philadelphia, and 904 Hartje Building, Pittsburgh, Pa. LEWIS S. SADLER, State Highway Commissioner.

Bids received until September 23, 1919.

## Highway Work

Office of the State Commission of Highways  
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at 1:00 o'clock P. M. on Tuesday, September 23, 1919, for the improvement of the following highways:

ORANGE COUNTY—One highway—2.48.

SUFFOLK COUNTY—One highway—3.13.

WASHINGTON COUNTY—Two highways—2.60 and 3.93.

And also for the Completion of the Following:  
CHENANGO COUNTY—Two highways—7.12 and 3.06.

DUTCHESSE COUNTY—One highway—6.86.

ERIE COUNTY—One highway—5.19.

GREENE COUNTY—One highway—3.95.

JEFFERSON COUNTY—One highway—4.05.

OSWEGO COUNTY—One highway—6.36.

OTSEGO COUNTY—One highway—8.13.

RENSSELAER COUNTY—One highway—7.20.

SARATOGA COUNTY—One highway—6.10.

STEUBEN COUNTY—One highway—4.99.

SULLIVAN COUNTY—Two highways—5.63 and 4.01.

WARREN COUNTY—One highway—5.13.

WESTCHESTER COUNTY—Two highways—5.72 and 4.62.

Maps, plans, specifications and estimates

may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the division engineers in whose division the roads to be improved and completed are located. The addresses of the division engineers and the counties of which they are in charge will be furnished upon request.

The especial attention of bidders is called to "General Information for Bidders" in the itemized proposal, specifications and contract agreement.

FREDERICK STUART GREENE,  
Commissioner.

ROYAL K. FULLER, Secretary.

Bids receive until September 24, 1919.

## Sewage Disposal Plant

TOWN OF PHILLIPSBURG, N. J.

Sealed proposals, accompanied by a check on a solvent national bank, duly certified by proper officer thereof, drawn to the order of James L. Lommerson, Treasurer, in the sum of one thousand dollars (\$1,000) as a proposal guarantee, will be received by the Commissioners of the Town of Phillipsburg, N. J., at Town Hall, until 3:00 P. M., September 24, 1919, for the construction of a sewage disposal plant.

Specifications, plans, proposals and contract forms are on file in the office of the Town Engineer, and contractors may obtain copies of the same by depositing ten dollars (\$10) for each set with the Town Engineer.

The right is reserved to reject any or all proposals or parts thereof.

Authorized by the Commissioners of the Town of Phillipsburg.

H. R. BRITTON,  
Commissioner of Streets and  
Public Improvements.

CLAIRE E. TILTON,  
Town Engineer.

bridge over Canyon Creek and grading 2 mi. Canyon-Creek-R. Danby Rd. Co. will issue \$35,000 bonds to cover cost of project.

**Pa., Ebensburg**—Grand Jury recommended the erection of new bridge from Haynes street, South Side, to Bedford street, Fourth Ward, upon application of citizens of the Fifth Ward, and further recommended that Cambria County contribute sum of \$35,000 as the county's share toward expense of said bridge. It is stated, however, that this recommendation of \$35,000 is in addition to previous recommendation that \$25,000 be appropriated by county. It also was stated that city has proposed to widen Haynes street and probably do some additional work on Bedford street side, thus increasing cost of erecting new bridge. City floated bond issue in the sum of \$50,000 for erection of proposed bridge, but \$12,000 of this amount has been expended for purchase of approaches to the bridge.

**Pa., Indiana**—Grand Jury has recommended building two bridges, both across Yellow Creek, and Co. Engr. has been instructed to prepare plans.

**S. C., Chester**—As result of meeting held at Lockhart, it was found that bridge across Broad River could not be built for less than \$70,000. A message was received by Supvr. Davis G. Anderson, from Supvr. Askew, of Union Co., saying that Union Co. will increase its appropriation for the bridge from \$12,500 to \$15,000, to make out the \$70,000, and urging Chester Co. to do same thing. Govt. will pay \$35,000, and Monarch Mills has agreed to furnish \$5,000.

**S. D., Yankton**—City of Yankton contemplates bridge across the Missouri

## BRIDGES

**Cal., Red Bluff**—Plans being prepared for 17 bridges in Tehama Co.; estimate, \$92,000. Address Co. Clk.

**Ida., Lewiston**—Resolution calling bond election for \$400,000 fund to be used in construction of bridges and roads in Nez Perce Co. was recently passed by Co. Comrs. Date for the election has been set for Oct. 7.

**Ind., Cedar Rapids**—Issue of \$24,000 bridge bonds will be sold. Address L. J. Storey, City Clk.

**Ind., Portsmouth**—Plans have been started for bridge over Lick Creek. W. G. Crawford, Co. Audr., will soon advertise for bids. G. C. Kinley, 1309 Franklin Ave., Engr.

**Ind., Youngstown**—Lowest bid on bridge across Crandall Park is \$53,800. Estimate is \$40,000. It is likely that additional funds will be voted.

**Ore., Canyon City**—Grant Co. soon lets contract building concrete piers for

River; will give direct route to Nebraska. \$1,300,000.

**Wash., Olympia**—Election will be held Nov. 4 to vote on issuance of \$25,000 to aid Thurston Co. in construction of \$157,000 concrete bridge over Des Chutes waterfall.

**Wash., Seattle**—Bond issue of \$3,000,000 is proposed for building of bridges in King Co. S. Humes, Co. Engr.

**Wash., Spokane**—It is planned to expend about \$25,000 for concrete arch bridge over Hangman Creek at Riverside Ave. Address A. D. Butler, City Engr.

**Wash., Spokane**—It is planned to erect concrete bridge at Riverside Ave., over Hangman Creek, at cost of \$25,000.

**Wis., Milwaukee**—Wisconsin Highway Comm. at meeting held Sept. 8, 1919, declared bridge at Grand Rapids, Wis., to be necessary. Bridge will be 500-ft. structure, with roadway and sidewalks about 52 ft. Survey will be made immediately and plans prepared. Contract will be let early in winter. Approximate cost, \$210,000. Geo. C. Hank, 465 Sidney St., Madison, Wis.

**Wis., Mukwonago**—Survey has been made and plans are being prepared by Wisconsin Highway Commission for Mill Race bridge of Mukwonago, Waukesha County. Bridge will be reinforced concrete deck girder structure of two 30-ft. spans, with baluster railings and concrete abutments.

#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**Fla., Jacksonville**—Duval Co. Comrs. have signed contract recently awarded for construction of million-dollar bridge across St. John's River, from Jacksonville to South Jacksonville. The Bethlehem Steel Bridge Corporation, of Bethlehem, Pa., will furnish and build the superstructure at cost of \$534,180, while Missouri Valley Bridge and Iron Co., of Leavenworth, Kan., will build the foundations and approaches at cost of \$374,447. The bridge will be 2,100 ft. long, of steel on concrete foundations. Harrington, Howard & Ash, of Kansas City, Mo., engineers, furnished the specifications.

**Ohio, Lima**—Zoph Blodgett, of this city, was only contractor for new Metcalf St. bridge, \$33,958.

#### MISCELLANEOUS

**D. C., Washington**—Bill authorizing expenditure of additional \$17,000,000 to complete Govt. railway in Alaska was taken up in house with every indication of its passage.

**Minn., St. Paul**—State House of Representatives passed Mayor Magney's public market bill authorizing the levying of \$100,000 worth of bonds to build public market in Duluth.

**Neb., Superior**—Special election, Sept. 16, to vote bonds of \$30,000 for parks.

**N. J., Passaic**—Bd. of Comrs. consider

appropriation of \$25,000 for permanent improvement of First, Second and Third Ward Parks of the city.

**N. Y., North Tonawanda**—William M. Mills, Charles Caldwell and Secretary Charles W. Ward, representing Chamber of Commerce, went to Niagara Falls and held conference with City Manager Fort on movement launched to build tunnel 20 ft. in diameter from Buffalo to Lake Ontario to take care of sewage of Niagara frontier cities. Mr. Mills, who is chairman of pure water committee of local trade organizations, stated that construction of the tunnel will involve plan to develop power, as tunnel would have a fall of approximately 250 ft. between Buffalo and Lake Ontario. It is estimated that project would involve expenditure of \$20,000,000, but Mr. Mills claims that power to be developed would cover this expense and pay at least 10% on investment.

**N. Y., Yonkers**—City bonds aggregating \$1,097,500 were sold by Comptroller James J. Lynch at best interest rate, from standpoint of the city, since the war started.

**Pa., Chester**—Councils awarded contract for new city bond issue of \$400,000 to Mellon National Bank, of Pittsburgh.

**Pa., Morrisville**—Considerable electrical and mechanical equipment will be required for new local sewerage disposal plant which is to be constructed by Boro. Council. Cost of plant with sewerage system, \$265,000. Thos. F. Bovie, Engr.

**Pa., York**—Brown Brothers, Philadelphia, were successful bidders for the \$150,000 issue of York City bonds, authorized by a general improvement ordinance, to bear interest at 4½ per cent.

**Tex., Galveston**—City and Galveston Co. will hold election Nov. 4, to vote on \$5,000,000 bonds to build seawalls and breakwaters.

**Wash., Walla Walla**—City Clk. Fred G. Wills advertised for bids for \$75,000 funding bonds, subject to call after October 15, 1925. Bids will be opened Sept. 30.

**W. Va., Wheeling**—City Engr. Harry Conrad is working on plans for massive concrete wall in front of property of Joseph Hasenaur, on Market St.; estimated cost, \$25,000.

**South Africa**—Irrigation Bd. in province of South Africa is in urgent need of construction machinery and equipment. List of supplies needed may be had on application to Bureau or its district offices. (Refer to file No. 40595.) Quotations and full details are requested at once. For further information apply to Bureau of Foreign and Domestic Commerce, Washington, D. C., Opportunity No. 30622.

**Ont., Niagara Falls**—Western Ontario is to have a new Hydro Radial line running from Hamilton through Brantford, Woodstock, Ingersoll and Dorchester to join the municipally owned London and Port Stanley railway between London and St. Thomas. Coupled with the scheme is plan of purchasing the privately owned radial running west and east from Hamilton to Brantford and Oakville respectively. With these link as part of the new Hydro-Radial, Sir Adam Beck, chairman of the commission, states that the people would be in control of

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#### BIDS RECEIVED AND CONTRACTS AWARDED.

(\*Indicates Contracts Awarded.)

**N. J., Paterson**—City is considering improvement of its garbage incinerating plant, either addition will be built or new one constructed.

**Pa., Philadelphia**—Contract awarded by Director Webster, of Dept. of Wharves, Docks and Ferries, to McLean Construction Co. has been approved by Mayor Smith. Contract calls for construction of a bulkhead along west bank of the Schuylkill River south of Penrose Ferry Bridge. Money will come out of the item of \$10,000,000 for port development in the municipal loan of \$67,100,000 authorized in June, 1916.

**Tex., Austin**—Attorney General's department received record in the improvement bond issues aggregating \$3,950,000 recently voted by the city of San Antonio. Early and favorable action by the department is expected.

**Tex., Orange**—Contract for completion of municipal docks and putting them in shape for use within next sixty days was awarded A. C. McFarland & Co. for \$51,946.91. Contract calls for completion of the railroad terminal, construction of new roadway and for completion of present warehouse. Execution of this contract will shift loading scene from Water street front to municipal docks, where rail lines will meet the ships.

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## TOO LATE FOR CLASSIFICATION

## BIDS ASKED FOR

## STREETS AND ROADS.

## In., Dubuque.

7.30 p.m., Sept. 24.

Improving street, involving 2,180 sq. yd. brick block or 2,015 sq. yd. bitulithic or sheet asphalt paving; 420 sq. yd. brick block on concrete foundation inside car tracks, pitch or asphalt filler to be used outside car tracks; 100 lin. ft. new cement curb, etc.—J. Stuber, City Recorder.

## N. J., New Brunswick.

2.30 p.m., Oct. 2.

Improving portion of roadway in Middlesex Co. with vitrified block surface upon concrete foundation, involving 600 sq. yd. surface pavement and 100 cu. yd. foundation.—A. B. Fox, Co. Engr., 175 Smith St., Perth Amboy.

## N. C., Greensboro.

noon, Sept. 26.

6,004 mi. state highway in Mecklenburg Co., involving 1,382 cu. yd. earth

## STREETS AND ROADS.

Mo., Linn—An election is proposed to vote road bonds to amount of \$500,000.

N. C., Asheville—Survey is being made of Waynesville-Balsam Rd. with plan to place hard-surfaced road there.

N. C., Clinton—The first stage of fight for direct trunk line highway through Sampson Co. to Wilmington has been won. Chmn. J. T. Kennedy, of Sampson Co. Bd. of Comrs. and Co. Rd. Comm., received communication that Federal and State aid has been voted for proposed Clinton-Wilmington Hwy. direct.

O., Sandusky—Erie Co.'s road program for 1920 provides for paving of 18.5 mi. of state highway at cost of \$500,000.

O., Tiffin—Co. Comrs. voted to pave another stretch of Tiffin-Fostoria Rd., probably with asphaltic macadam. Cost will be \$40,000.

Okl., Tulsa—Triumph of \$1,000,000 good roads bond issue in Creek Co. will mean early completion of highway between Tulsa and Sapulpa.

S. C., Chester—Issuance of \$140,000 municipal bonds for improving streets and \$35,000 bonds for improving and extending water works system was voted. The Mayor.

Tex., Caldwell—Canyon Co. will this year spend \$125,000 on its highways. Tentative plans for road improvements are as follows: Approximately 16 mi. of road between Caldwell and Parma; eight mi. to complete loop connecting Peaceful Valley, Lakeview and Snake River at Pickle Butte Bridge; four mi. of road running through Lakeview country east to Nampa Hwy. Dist.; six mi. of road connecting Maple Grove community with Nampa Hwy. Dist.; two roads, totaling nine mi., in Franklin Dist., running south to Nampa Hwy. Dist. and west to Caldwell; Five mi. of road, starting at Caldwell city limits and running to point one mi. west of Pleasant Ridge school house; three mi. of road through Greenleaf county, south to Lowline Canal; at least two roads, approximately six mi., running north and south through Houston and lower Deer Flat counties; improvement of road running on north side of Lake Lowell east to Nampa Hwy. Dist.

Tex., Groveton—Petitions for road bond elections from Groveton Rd. Dist. No. 1, for \$200,000; Apple Springs Dist. No. 4, for \$200,000, and Chita-Carlisle Dist. No. 5, for \$140,000, were presented at September term of Comrs. Court of Trinity Co., asking that elections be ordered in various districts Oct. 11 to determine whether bonds shall be voted for road improvements.

Tex., Mangum—Co. Comrs. have ordered the grading and surfacing of public road that connects Eastland and Mangum and it will be put in first-class condition. Citizens of Mangum are taking advantage of the situation. They are laying off and grading streets and have contracted with City Engr. Wright of Eastland to superintend installation of public utilities of every description. A brickyard that will utilize the shale of fine quality found near Mangum will be put in operation at once. A sandstone quarry a short distance north of the railroad will be opened, and limestone deposits south of the railroad will be utilized in building operations.

Tex., Stephenville—At meeting of Young Men's Business League \$75,000 was subscribed on proposed toll highway from this place to Desdemona. It will be made \$100,000 or more. Several business men from Desdemona assured

excavation; 3,192.96 tons stone, reconstruction old macadam for use as base course; 26,138.17 sq. yd. plain cement concrete header curbing and base course 1:3:6 mix 5-in. depth or sheet asphaltic concrete; 56,355.5 sq. yd. bituminous concrete wearing surface; 369 lin. ft. 15-in. and 202 lin. ft. 18-in. standard vitrified shale pipe culvert in place, and 47.24 cu. yd. Class B concrete (headwalls).—W. S. Fallis, State Hwy. Engr., Raleigh.

## SEWERAGE.

## In., Dubuque.

7.30 p.m., Sept. 24.

Sanitary sewer in city street, involving 1,490 lin. ft. 8-in. tile pipe and eight manholes.—J. Stuber, City Recorder.

## O., Vermillion.

noon, Oct. 6.

Sewer system and appurtenances, com-

prising 50 lin. ft. 12-in., 6,000 lin. ft. 10-in., 23,200 lin. ft. 8-in. and 3,200 lin. ft. 6-in. vitrified pipe, house connections, 100 manholes.—G. B. Gascoigne, San. Engr., Cleveland.

## Wis., Janesville.

2 p.m., Sept. 26.

Sewers in various city streets, involving 6,006 lin. ft. 8-in. sewers, 14 manholes and 8 lampholes.—City Clk.

## BRIDGES.

## In., Elkader.

1.30 p.m., Sept. 25.

Two 30-ft. I-beam spans and 175-ft. high truss span in Clayton Co.—Co. Engr.

## N. J., Elizabeth.

2.30 p.m., Sept. 26.

New road approaches and rails at both sides of bridge over Robinson Branch River in city of Rahway.—J. L. Bauer, Co. Engr., 120 Broad St.

crete, first-class, \$1,367.82; 18.06 cu. yd. concrete, second-class, \$288.96; 7,034 lbs. steel reinforcing bars, \$492.38; 830 ft. plain concrete pipe, 12-in., \$1,660; 104 ft. rein. conc. pipe, 18-in., \$338; total, \$44,149.66. Other bids received were Jarvis & Ward, Olson, Wash., \$45,535.47; R. A. Sloan, 41 Stuart Bldg., Seattle, Wash., \$48,425.72; J. W. Hoover, Everett, Wash., \$49,784.60; Skagit Constr. Co., Mt. Vernon, Wash., \$62,114.66.

\*Wash., Olympia—\*Henry & McFee, Northern Life Bldg., Seattle, Wash., awarded contract for Castle Rock North Rd., in Cowlitz Co., as follows: Clearing 40 acres, \$17,000; grubbing, 17.9 acres; \$4,475; 169,440 cu. yds. com. excavation, \$101,664; 7,160 cu. yds. loose rock, \$6,444; 17,160 cu. yd. solid rock excavation, \$29,-

172; 394,000 cu. yds. overhauling, \$11,820; 11,000 cu. yds. gravel surfacing, \$27,500; 512.3 cu. yd. concrete, first-class, \$17,920; 40 cu. yd. second-class concrete, \$1,340; 43,502 lb. steel reinforced bars, \$3,480.16;

904 ft. plain concrete pipe, 12-in., \$1,356; 268 ft. reinforced concrete pipe, 18-in., \$670; 252 ft. reinforced pipe, 24-in., \$1,008; 8 ft. 36-in. pipe, \$48; overhead structure, 406 cu. yd. first-class concrete, \$14,-

210; 40,000 lb. reinforced steel bars, \$3,-

200; total, \$241,317.66; General Constr. Co., Spokane, Wash., \$254,437.18; Erickson & Pellegrino, 1001 Nat. Realty Bldg., Tacoma, Wash., \$266,969.56; Allred, James & Hendricks, Centralia, Wash., \$276,-

301.74.

## SEWERAGE.

O., Portsmouth—Sealed bids will be received on bond issue of \$40,000 for sewer extension.

O., Toledo—Sealed bids will be received until Sept. 30 on bonds of \$1,000,000 for sewers.

Okl., El Reno—City voted bond issue of \$95,000 for sewer system, and work will be pushed as rapidly as possible.

S. C., Batesburg—City will improve sewers and water works, \$100,000, bonds having been voted. Nisbet Wingfield, Engr., Augusta, Ga.

Tex., Beaumont—Order was issued instructing C. W. Rollins, Drainage Engr., to prepare modified plans for drainage of Beaumont and northern portion of Jefferson Co. Plans drawn by engineers at instance of Drainage Committee appointed by Chamber of Commerce will be followed as closely as practicable, calling for expenditure of \$1,000,000. Under this plan 23,000 ft. of concrete sewer will be laid in city of Beaumont at cost of \$250,000, while the remaining \$750,000 will be expended in cleaning out Taylor's Bayou, Hillebrandt Bayou, tributaries to these streams, and construction of main drainage ditches in rural districts in this territory; \$615,000 will be expended in draining, \$70,000 for engineering, culverts and bridges, leaving \$65,000 for incidentals and contingencies.

Tex., Plainview—City Council voted to spend \$50,000 on sewer improvements, making it more sanitary, by moving plant further from city limits and putting in new Imhoff tank. 9,000 ft. of 15-in. main will be laid and improvements will be made to system in city limits.

## WATER SUPPLY.

La., Shreveport—City will vote in December on \$800,000 bond issue to provide adequate water system.

Neb., Schuyler—Extensive additions to water works system are planned. E. A. Schmid, Comr.